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ABSTRACT

This final report describes activities and accomplishments of the Writing Lab Outreach Project (WLOP), a federally supported 3-year collaborative effort of Western Michigan University and the Kalamazoo (Michigan) Public Schools to prepare teams of general and special educators and speech-language pathologists to implement the writing lab approach in inclusive educational settings (grades 1-3). The writing lab approach combines writing process instruction, computer supports, and collaborative, inclusive, individualized service delivery to improve the spoken and written language skills of students with and without disabilities. The WLOP provided professional development experiences for 35 interdisciplinary development team members, 33 outreach team members, 65 intensive workshop participants, and approximately 2,000 workshop participants. Evaluation data from story probes written by 400 students (including 52 with special education needs) found significant increases in story scores, written language fluency, numbers and types of conjunctions, and lexical diversity, as well as decreases in grammatical errors, cohesion problems, and percentage of spelling errors. Research also identified variables that most distinguished typical from disordered performance including total words produced in stories, numbers and types of conjunctions, number of different words, and percentage of spelling errors. Appendices list dissemination activities and detail software features, and provide survey results and a case study. (Contains 16 references.) (Author/DB)

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Final Performance Report

WRITING LAB OUTREACH PROJECT

PR Award Number: H324R980120
Outreach Projects for Children with Disabilities
September 1, 1998 - August 31, 2002

U.S. Department of Education
Office of Special Education Programs
Research to Practice Division

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U.S. Office of Special Education Programs

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December 31, 2002

EC 309720

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ABSTRACT

The Writing Lab Outreach Project (WLOP), a collaborative effort of Western Michigan University and the Kalamazoo Public Schools, brought research to practice by preparing teams of general and special educators and speech-language pathologists to implement the writing lab approach in inclusive educational settings (grades 1-3). The writing lab approach combines writing process instruction, computer-supports, and collaborative, inclusive, individualized service delivery to improve the spoken and written language skills of students with and without disabilities.

The WLOP provided professional development experiences for 35 interdisciplinary development team members, 33 outreach team members, 65 intensive workshop participants, and as many at 2,000 workshop participants. Countless others are expected to benefit from the book, *The writing lab approach to language instruction and intervention*, and other publications that will result from the project.

Research data were gathered from story probes written by over 400 diverse students from first through fifth grade at the beginning, middle, and end of the school year. The group included 52 students with special education needs or high risks. The results showed significant increases in story scores, written language fluency, numbers and types of conjunctions, and lexical diversity, as well as decreases in grammatical errors or cohesion problems, and percentage of spelling errors. Although students with disabilities made similar progress to their peers, variables were identified that most distinguished typical from disordered performance: at the discourse level—total words produced in stories and story scores, at the sentence level—numbers and types of conjunctions; and at the word level—number of different words (lexical diversity), and percentage of spelling errors.

ACKNOWLEDGEMENTS

The work described in this report was supported by the U.S. Department of Education, Office of Special Education and Rehabilitation Services, Western Michigan University, and the Kalamazoo Public Schools. We gratefully acknowledge all of the tangible and other support that we received from these and additional sources, but we point out that the opinions expressed herein are our own and do not necessarily represent those of our sponsors. We have done our best to present accurate and complete information, and we take full responsibility for the content of this report.

As an outreach project, the success of this "research to practice" effort can be measured by the active involvement of a variety of participants. The complete list is too extensive to name, but we do want to specifically acknowledge the participation of each of the following individuals and their contributions to the Writing Lab Outreach Project during its four-year duration:

Key Staff

- Dr. Nickola Wolf Nelson, Co-Primary Investigator, Professor in the Department of Speech Pathology and Audiology, and Associate Dean for Research in the College of Health and Human Services at Western Michigan University
- Dr. Christine M. Bahr, Co-Primary Investigator, Chair of the Department of Teacher Education, St. Mary-of-the-Woods College, IN.
- Adelia Van Meter, Project Coordinator, Assistant Clinical Specialist at Western Michigan University
- Joyce Gard, Administrative Assistant and budget manager, Department of Speech Pathology and Audiology, Western Michigan University

Kalamazoo Public School Administrators

- Dr. Janice Brown, Superintendent (years 3 and 4)
- Dr. Pat Coles-Chalmers, Assistant Superintendent (years 3 and 4)
- Cindy Green, Director of Special Education (years 3 and 4)
- Dr. Kay Royster, Superintendent (years 1 and 2)
- Patricia Williams, Director of Special Education (years 1 and 2)
- Audrey Fitzgerald, Curriculum Coordinator (years 1 and 2)
- Yvonne Payton, Assistant Superintendent (years 1 and 2)

Consultants

- Dr. Kathryn Kinnucan-Welsch, University of Dayton
- Dr. Candace Bos, University of Texas at Austin (now deceased)
- Dr. Janet Sturm, University of North Carolina-Chapel Hill
- Kara McAlister, doctoral student, University of Illinois-Chicago

Sponsors of Intensive Outreach Workshops

- Sally Disney, Hamilton County, Ohio, Special Service Center
- Dr. Maureen Staskowski, Macomb, MI, Intermediate School District

Year 1
1998-1999

Milwood Elementary School Development Team Members

- Carl Czuchna, principal
- *Sharon Lawson, 3rd grade teacher
- *Roger Fleming, 3rd grade teacher
- *Greg Socha, 1st grade teacher
- Pam Ward, special education teacher
- *Kathy Palmer, computer lab coordinator

*** This person served as Summer Institute instructor as well.**

Graduate Assistants

- Carrie Nagayda
- Anna Putnam

Outreach Teams (Summer Institute participants & outreach instructors)

Team 1, Benton Harbor, MI

- Shelley Griffin, special education teacher
- Toni Doswell, 5th grade teacher

Team 2, Bridgman, MI

- Shirley Cole, 3rd grade teacher
- Shirley Hoag, special education teacher

Team 3, Patterson-Kennedy Elementary, Dayton, OH

- Cheryl Zinck, special education teacher
- Molly Spears, teacher of hearing impaired children
- Heidi Riffle, special education teacher
- Debbie Tauber, kindergarten teacher
- Joan Morgan, 1st grade teacher

Team 4, Northeastern Elementary, Kalamazoo, MI

- Lisa Barkovich, 3rd grade elementary teacher
- Wilma Virkus, instructional specialist

Team 5, (upper elementary) Kalamazoo, MI

- Heidi Nestell, Hillside elementary special education teacher
- Flo Thole, Chime elementary teacher

Team 6, Edison School, Kalamazoo, MI

- Nikki Jenkins, early elementary teacher
- Marsha Bettison, early elementary teacher

Year 2
1999-2000

Washington Writers' Academy Development Team Members

- Barbara Witzak, principal
- *Dawn Chamberlain, speech-language pathologist
- *Anne Lape, publication house teacher
- *Christy Roth, 3rd grade teacher
- Kathy Sandow, 3rd grade teacher
- *April Widner, special education teacher
- *Beverly Wilson, 3rd grade teacher
- Sylvia Washington, 1st grade teacher
- Charlene Cromwell, 2nd grade teacher

* Served as Summer Institute instructor as well.

Graduate Assistants

- Karey Hill
- Melanie Lynam

Outreach Teams (Summer Institute participants & outreach instructors)

Team 7, Comstock, MI

- *Laura Jane Van Niman, 1st/2nd grade teacher
- *Shawn McMeekan, 1st/2nd grade teacher
- *Janet DeZwaan, speech-language pathologist

*** This team participated in the research on student progress.**

Team 8, San Antonio, TX

- Karen Biggerstaff, speech-language pathologist and technology specialist

Team 9, Amarillo, TX

- Mary Ann Ellis, speech-language pathologist and music therapist

Team 10, Kalamazoo, MI

- Irma Johnson, elementary teacher

Year 3
2000-2001

Spring Valley Center for Exploration Development Team Members

- Kevin Campbell, principal
- *Angela Neaton, 3rd grade teacher/special education certified
- *Shirley Schostarez, 3rd grade teacher/special education certified
- Karie Hokenmaier, 3rd grade teacher

* Served as Summer Institute instructor as well

Graduate Assistants

- Carrie Kopitzki
- Kathy Enslen

Outreach Teams (Summer Institute participants & outreach instructors)

Team 11, Battle Creek, MI

- Carol Sewell, speech-language pathologist

Team 12, Arcadia Elementary, Kalamazoo, MI

- Fran Bartocci, special education teacher
- Tracy Wilson, elementary teacher

Team 13, Central High School, Kalamazoo, MI

- Fannie Charles, special education teacher
- Lynel Hackley, special education teacher
- Linda Lee, secondary English teacher

Team 14, Lincoln Elementary, Dayton, OH

- Elizabeth Damico, early elementary teacher
- Maura Fitsgerald, early elementary teacher

Team 15, Parkwood Elementary, Kalamazoo, MI

- Susan Dragt, 5th/6th elementary teacher
- Kristin Vankirk, 5th grade elementary teacher
- Mindy McNulty, special education teacher

Spring Valley Development Team Addition

- Laura Zigmont, speech-language pathologist

Year 4
2001-2002

Spring Valley Center for Exploration Development Teams

- Kevin Campbell, principal

Upper Elementary Development Team (Sept.-Dec., 2001)

- Patty Buckingham, 5th grade teacher
- Michelle Keene, 5th grade teacher
- Jennifer Garrow, 4th grade teacher
- Dawn Hosler, 4th grade teacher
- Sarah Corwin, special education teacher

2nd Grade Development Team (Jan.-April, 2001)

- Julie Jones, 2nd grade teacher
- Beth Vargas, 2nd grade teacher
- Cheryl Wright, 2nd grade teacher

Graduate Assistants

- Amanda Luna-Bailey
- Kristen Kopacz

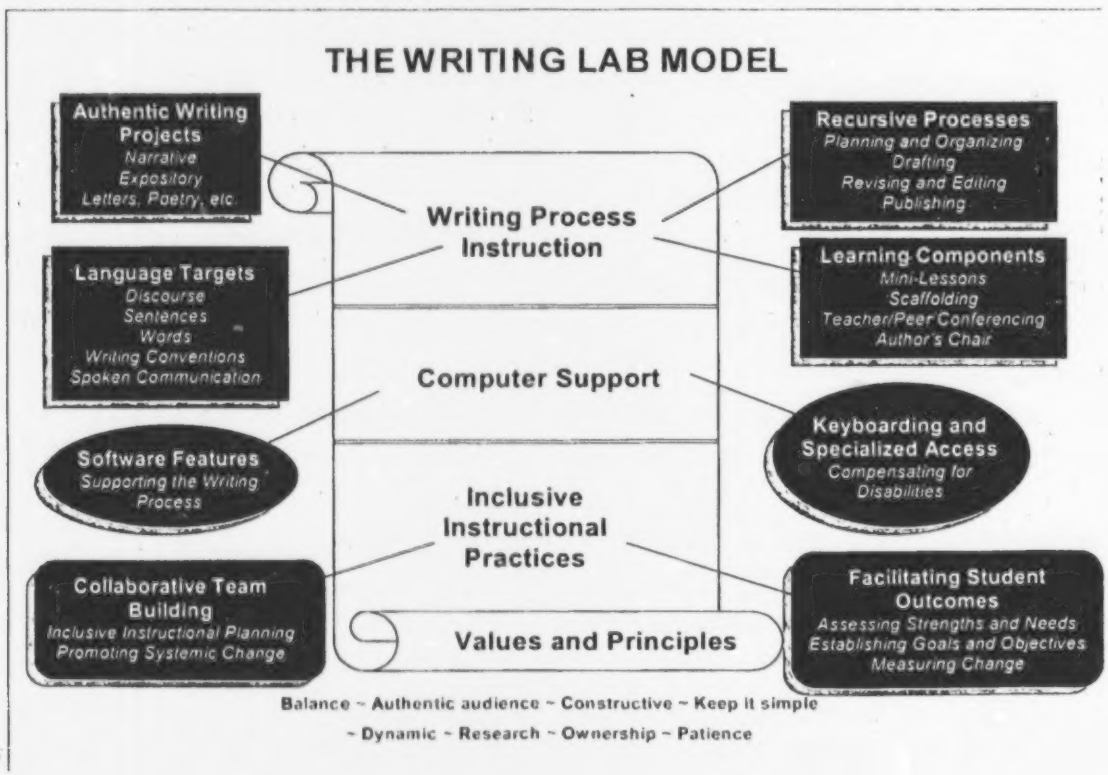
Graduate Trainees (in Language and Literacy for Diverse Populations Project)

- Montelle Curtis
- Marianne Dykema
- Kristen Kopacz
- Amanda Luna-Bailey
- Ella Lutska
- Julie Roy
- Katie Shangraw
- Jeni Scherer
- Connie Squires Van Dussen
- Leah Wielhouwer

PART I. EXECUTIVE SUMMARY

The Writing Lab Outreach Project was a collaborative effort of Western Michigan University and the Kalamazoo Public Schools to improve the spoken and written language skills of students with disabilities (and other students with literacy learning risks). It was designed to bring research to practice by preparing teams of general and special educators and speech-language pathologists to implement the writing lab approach in early childhood (grades 1-3). The treatment involved curriculum-based writing process activities, computer-supports, and collaborative, inclusive, and individualized service delivery (as illustrated in the model in Figure 1), based on the BACKDROP principles: Balance, Authentic Audience, Constructive, Keep-it-simple, Dynamic, Research and Reflective practices, Ownership, and Patience.

Figure 1. The writing lab model



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The project was originally funded for the three years from 1998-2001. A fourth year no-cost extension was approved for the 2001-2002 school year. The three goals of the project were to:

1. Enhance knowledge and skills about effective literacy instruction among general and special educators (including speech-language pathologists);
2. Promote the inclusion of students with disabilities in meaningful general education curricula; and
3. Facilitate language and literacy development among students with disabilities.

Evidence of Successful Professional Development

A muli-level model of professional development was used, with four levels of training intensity, each of which encouraged outreach by those trained directly to others in their local sites. The first level involved extensive training of **development team** members through direct collaborative participation with the writing lab staff (3 days per week (2 days in year 4) for Nelson, Van Meter, and a series of graduate assistants, and several visits per year for Bahr). The second level involved the instruction of **outreach team** members who participated in intensive 2- and 3-week summer institute activities. The third level involved the instruction of **workshop participants** who attended specially designed multiple session workshops, or more traditional single session workshops, to learn about the writing lab approach and related inclusive language intervention methods. A fourth level of intensity involved **publications** designed to disseminate information about the approach to an even broader audience.

The **development team** sites were three partnership elementary schools in the Kalamazoo Public School district. In these schools, 3 principals supported the effort and 35 other individuals served as members of the development teams (14 general

education and 5 special education teachers, 14 speech-language pathologists or graduate assistant trainees, and 2 other support specialists). In each of these primary sites, development teams met regularly to: (a) learn about the computer-supported writing process approach, (b) implement the inclusive writing lab model in their building, (c) develop management and instructional materials for the lab, (d) plan summer institute training, (e) serve as collaborative faculty partners for summer institute training, (f) implement action research projects on selected components of the computer-supported writing process approach with their students, and (g) share results with other educators. In the second and third years of the project the development teams held formal workshop sessions for other members of their school staff (approximately 25 teachers at Washington Writers' Academy and 20 teachers at Spring Valley Center for Exploration).

At the second level of professional development, members of 15 **outreach teams** at the regional and national level received intensive 2- and 3-week instruction in the summer institutes. The institutes were designed with half-day instructional sessions, in which participants learned about and practiced using the components of the writing lab model, such as how to use features of children's writing software programs as scaffolding tools, how to use assessment methods for analyzing written language development and writing goals and objectives, and how to use written language developmental progressions and other tools and strategies for planning minilessons and scaffolding individualized instruction. Time was allotted during these half-day sessions for outreach teams to plan collaborative interventions, which they implemented during the other half-day with students with disabilities and other learning risks who attended summer school sessions. A total of 33 individuals took part in these intensive training

activities as outreach teachers. These individuals then worked with others in their outreach sites to extend the model across the region and to national sites in Texas and Ohio. The summer institutes were advertised on our web site, www.wmich.edu/wlop, and through brochures distributed through national conferences and regional mailings. The first group of regional outreach teams participated in summer institute training from June 18 through July 1, 1999. The second summer institute was held June 12-29, 2000. The third summer institute was held June 18-28, 2001.

The third level of professional development, **workshop participation**, was used to train a large number of professionals across the United States and Canada. Project staff made 44 professional presentations (listed in Appendix A) about the writing lab approach and related curriculum-based language intervention techniques. Some of these were intensive one-, two-, or three-day workshops.

Within the workshop model, we experimented with ways to intensify an he professional development experience. That is, in Hamilton, Ohio (during the 2001-2002 school year) and in Macomb, Michigan (during the 2002-2003 school year—still in progress), we conducted a series of workshops with teams of general and special educators and speech-language pathologists. In the first meeting in the series, professionals learned about the writing lab model and other forms of curriculum-based language intervention. They planned projects and received additional instruction and support in implementing their projects mid-way through the school year. Toward the end of the year, participants presented their projects at a poster session for their peers.

We also had evidence that the single day workshops resulted in change in practice as indicated by numerous email communications received after the workshops requesting more detailed information about particular components of the writing lab

approach related to implementation in their own sites, including some as distant as Taiwan and Brazil. We estimate that as many as 2,000 other individuals learned about the writing lab approach through these presentations and workshops.

A fourth level of professional development was addressed through publications that should reach an even broader audience. During the three-year grant period, supplemented by the additional year of no-cost extension, we have completed and delivered the manuscript for a book, tentatively titled, ***The writing lab approach to language instruction and intervention.*** Paul H. Brookes Publishing Co. will publish the book in 2003. It provides a comprehensive explanation of the writing lab approach for collaborative general and special education intervention teams, including speech-language pathologists. It draws on the experience of development and outreach teams and presents data based on the four-year WLOP, as well as our prior research and professional preparation projects. Additionally, during the period of grant implementation, we published 3 articles on the writing lab approach in peer-reviewed journals, and 3 book chapters on related topics (see Appendix A).

Evidence of Language and Literacy Growth for Students with Special Needs

Beyond its primary focus on professional development and the research-to-practice effort, the writing lab outreach project included evaluation and research components that were designed to contribute to the evidence base regarding: (a) educators' knowledge, skills, and attitudes toward this instructional approach, (b) development of written language abilities across the elementary school years, and (c) the impact of computer-supported writing process instruction on students' written language products and processes, as well as their spoken communication interactions.

Preliminary analyses have been conducted of written language probes gathered by 404 diverse students at three development team schools and one outreach school. Although identifiers were not available for all students whose writing was represented in this total, the demographics of students who were included in various analyses were as follows:

- 206 males and 198 females
- 322 students identified ethnically, including 165 African American, 136 Euro American, 20 Hispanic American, and 1 Asian American student.
- 259 students identified by learning label, including 207 typically developing or academically talented and 52 students with identified special education needs or at high-risk for needing special education (recalling that this was an early childhood project focused on grades 1 through 3, and not all special needs children were yet formally identified).

A series of preliminary analyses resulted in conclusions regarding normal development and about the reliability and validity of particular measures of written language growth:

- **Discourse maturity changes in story grammar** can be documented and used for planning intervention and measuring change, particularly if some caution is exercised when drawing conclusions based on single stories. As a general rule of thumb, teams can expect students to grow from writing isolated descriptions, to including temporal and causal elements in their stories as they transition from first to second grade. Preliminary evidence also suggests that intervention can make a difference in the speed of this transition, although carefully controlled research trials are needed to provide clear evidence of efficacy. By third grade, most students include causal elements in their stories, and many imply or state

their main characters' goal direction and planning (elements of complete narrative episodes and higher order thinking). Within this broad pattern, some students write stories with complete and elaborate episodes as early as first grade, and some competent fifth graders write isolated descriptions on particular days for the purpose of informing readers about themselves and their friends, even though they might be capable of producing higher level narratives.

- **Discourse fluency**, measured as numbers of words and T-units produced in one-hour probes, grows in steady increments across grades one through five.
- **Sentence complexity can be measured as mean length of T-unit** (MLTU; a T-unit essentially is a main clause with any other embedded or subordinated phrases or clauses). Although this finding is consistent with much prior research (as summarized by Scott, 1989), we offer new data to supplement existing normative tables, which traditionally have begun at grade three, showing an apparent jump in MLTU from 2nd to 3rd grade. Other than this important step in written syntax development, our evidence shows that MLTU is not the most sensitive indicator of language growth during elementary school.
- **Sentence level growth** also can be measured using the sentence coding system (si=simple incorrect, sc=simple correct, ci=compound/complex incorrect, cc=compound/complex correct) and counts of different types of conjunctions (using the software tool, *SALT: Systematic Analysis of Language Transcripts* (Miller & Chapman, 2002)).
- **Word level growth** is best measured as numbers of different words and percentage of words spelled correctly.

Measurement of written language growth for students participating in the writing lab approach supported positive conclusions regarding its effectiveness. Although a more tightly controlled research design will be necessary to draw firm conclusions about efficacy of the approach, the evidence gathered during the implementation of the approach justifies the following preliminary conclusions:

- The total group of students participating in the writing lab approach demonstrated significant written language development at the discourse, sentence, and word levels on a variety of measures.
- Students with special needs showed evidence of language growth similar to that of their typically developing peers, although they continued to lag behind in certain areas.

Analyses comparing the stories written by students with and without special needs yielded a set of measures that are most discriminative for differentiating typical and disordered language performance. These variables also serve as desirable targets for intervention:

- Story grammar maturity.
- Fluency measures of total words & total utterances.
- Numbers and types of conjunctions.
- Number of different words (lexical diversity).
- Percentages of words spelled correctly and incorrectly.

PART II. COMPLETION OF GOALS AND OBJECTIVES

Three major goals were addressed with the WLOP. In this section, we list **project objectives** and summarize **activities**, **accomplishments,** and **outcomes** for each of the major goals.

GOAL 1.0 TO ENHANCE KNOWLEDGE AND SKILLS ABOUT EFFECTIVE LITERACY INSTRUCTION AMONG GENERAL AND SPECIAL EDUCATORS

Objective 1.1. To create communities of learners among general and special educators in four *development team schools* (one in Year 1, one in Year 2, and two in Year 3).

Activities and Accomplishments for Objective 1.1

Milwood Elementary School in Kalamazoo, Michigan served as the local outreach (development team) site during Year 1. Washington Writers' Academy served as the development team site in year 2. Spring Valley Center for Exploration served at the development team site in year 3. Spring Valley continued as the development team site in year 4. One reason that a fourth school was not added (as originally planned) is that the school that had been anticipated to become a development team site was unable to add a computer lab as expected, making it ineligible to serve as a development team school. Spring Valley already had a computer lab outfitted with software that could be used in our fourth year of no-cost extension.

In the three development team schools, 3 principals supported the effort, and 35 other individuals served as members of the development teams. These included 23 practicing professionals and 12 graduate trainees or graduate assistants in speech-language pathology. Table 1 shows the distribution of professionals who learned to implement the writing lab approach as members of development teams facilitated by Adelia Van Meter and Nickola Nelson.

Table 1. Development team members across the four project years.

YEAR	DEVELOPMENT TEAM PROFESSIONALS							
	SPED	**Support**	**SLP***	**1st**	**2nd**	**3rd**	**4th**	**5th**
1st	1	1	2	1				
2nd	1	1	3	1	1	3		
3rd	2		3			1**		
4th	1		6		3		2	2

*The SLP category includes graduate assistants and other trainees.
**In addition, the 2 special ed. trained teachers in the third grade, taught 3rd grade.

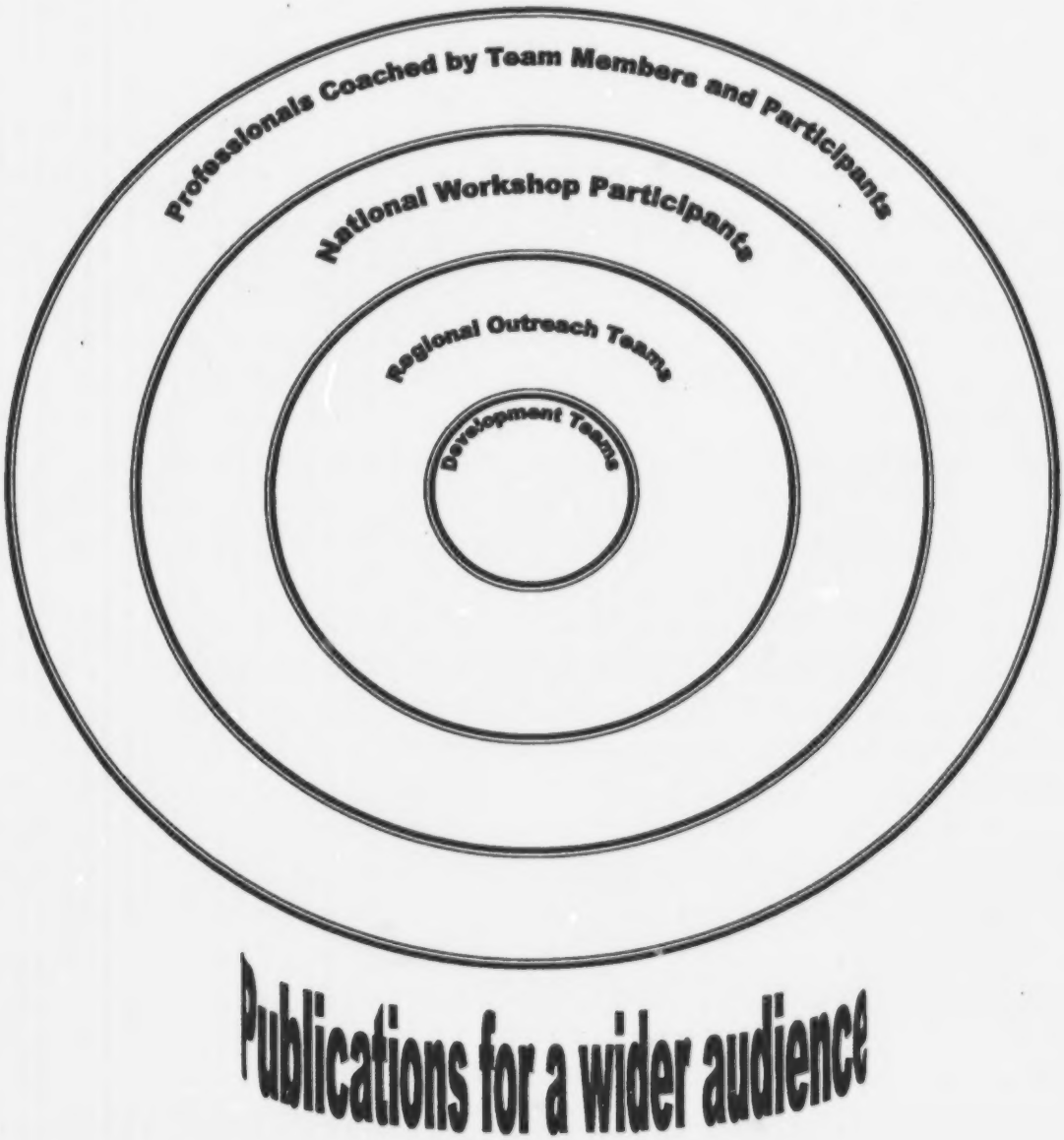
Project funds were used to purchase children's word processing software for each of the development team schools. Development team members held after school workshops for the other teachers in the school during the second and third years of the project—at Washington Writers' Academy and Spring Valley Exploration Center. Purchased programs included *KidWorks Deluxe* (Davidson), *Ultimate Writing & Creativity Center* (The Learning Company) and *Inspiration* (Inspiration Software, Inc.). Project staff worked with school faculty to integrate writing process instruction and computer supports provided by these software programs into the prescribed language arts curriculum and into other aspects of the curriculum, such as science and social studies.

Objective 1.2. To provide ongoing professional development activities for general and special educators related to computer-supported writing process instruction.

Activities and Accomplishments for Objective 1.2

The professional development model used in the WLOP involved four levels of intensity (illustrated in Figure 2), with varying degrees of participation by educators. Local educators who served as development team members worked closely with project staff to develop and implement the Writing Lab model in their local schools. Regional outreach team members who participated in summer institute training engaged in a two- to three-week intensive professional development experience, then continued to refine their skills through follow-up meetings throughout the year. Participants in professional workshops learned about the major components of the Writing Lab model in a short, condensed fashion and were invited to continue communicating with project staff through email. Through each of these mechanisms, we invited educators to contribute from their own experiences, to implement ideas in their own communities, and to engage in ongoing inquiry about best practices for helping all children to become literate. Finally, publications were completed to disseminate the model to a broader audience.

Figure 2. Multi-level model of professional development.


Professionals Coached by Team Members and Participants
National Workshop Participants
Regional Outreach Teams
Development Teams
Publications for a wider audience

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Numbers of participants at each level can be summarized as follows:

- 38 **development team** members (3 principals, 14 general education teachers, 5 special education teachers, 14 speech-language pathologists and speech-language pathology graduate students, and 2 support staff) participated in the most intensive level of direct, semester or yearlong collaborative experiences. They collaborated with the writing lab staff working with students from first through fifth grades at partner schools in the Kalamazoo Public School district.
- 33 **outreach team** members (15 teams) participated in intensive 2- and 3-week summer institute activities. One of these team members has low vision herself.
- 65 **workshop participants** attended multiple session workshops and implemented curriculum-based language and literacy projects; approximately 2,000 more attended 44 traditional single session workshops across the U.S. and in Canada.
- 8 **publications** were written to disseminate information about the approach to an even broader audience, including a book (currently in press at Paul H. Brookes Publishing Co.) tentatively titled "The Writing Lab Approach to Language Instruction and Intervention."

During Years 2 and 3, in addition to building a community of learners among Washington Writers' Academy and Spring Valley development team members, we extended training to all teachers and student interns in the building by providing after-school workshops on use of the software that we had installed. In these sessions, development team members provided a brief overview of the writing lab approach, then introduced teachers to the taxonomy of software design features and their application in supporting students throughout the writing process (Appendix B).

Participants then worked at computers to learn about and explore the critical design features of *Ultimate Writing & Creativity Center* and *Inspiration* programs.

Among the level four workshop sessions, project staff and colleagues taught a computer workshop at the 1999 Annual Conference of the American Speech-Language-Hearing Association in San Francisco, CA (40 participants), and a full-day institute at the 2000 Annual Conference of the American Speech-Language-Hearing Association in Washington, DC (65 participants). Other presentations were invited by other school districts and agencies around the nation and in Canada. Some were directly related to the writing lab approach. Others addressed more generic issues of curriculum-based language intervention, but all provided opportunities to introduce audiences to the possibilities for language and literacy development by implementing components of an inclusive, computer-supported writing lab approach.

Objective 1.3. To provide three summer institutes (one per year) on the topic of computer-supported writing process instruction as a means of establishing 30 *regional outreach teams* (10 teams of two for each of three years).

Activities and Accomplishments for Objective 1.3

Summer Institutes were held at the completion of each of the 3 originally scheduled school years of the project. A total of 33 outreach team members, participating on 15 different teams from Michigan, Ohio, and Texas took advantage of this professional development opportu. ity. These summer institutes were advertised on our web site, www.wmich.edu/wlop, and through brochures handed out at national conferences and mailed to school districts in the region. Although the original plan was for teams of general and special educators and speech-language pathologists to attend

summer institute training together, in some cases (because of extensive time commitments), only one member of a team was able to participate directly in the workshop, but that person committed to train and collaborate with others in outreach sites. Members of outreach teams returned to report on their outreach efforts and to support each other in further developments three times during the project.

The first summer institute was held June 18 through July 1, 1999 at Milwood Elementary School in Kalamazoo, Michigan. Four Milwood Elementary development team members served as co-instructors. The 13 participants who attended represented 7 different elementary schools in southwestern Michigan and Dayton, Ohio. A total of 59 students participated in the complete summer institute (18 first graders; 25 third graders; 16 fifth graders). All students produced one narrative and one expository writing piece using the computer software. They shared their work through classroom and computer lab presentations and during an end-of-session publishing party with their parents and district administrators as guests.

The second summer institute was held June 12-29, 2000 at the Washington Writers' Academy. For the second summer institute, we extended the training two days at the beginning of the institute to ensure that sufficient groundwork was laid. This decision was based on feedback from the first year's participants. During week one, we introduced participants to the Writing Lab model, taught them how to use the selected writing software, allowed them to explore other computer-supported writing tools, and began instructional planning for the following two weeks. During weeks two and three, the participants worked in teams to provide writing lab instruction and intervention to 25 Kalamazoo Public School elementary students, most considered to be economically disadvantaged. Four local outreach teachers from Washington Writers' Academy

served as co-instructors for the first two weeks of the summer institute. During the third week, regional outreach team members assumed full responsibility (with project staff support) for implementing the writing lab activities with students. Four teams, comprising 6 individuals from 4 school districts, formed the outreach teams for this institute. Although the 3-week syllabus permitted deeper involvement in learning the model, its intensity likely played a role in preventing some potential participants from registering for the institute.

In an attempt to increase the number of participants, the third Summer Institute was scheduled for two weeks, from June 18-28, 2001. Again, development team members and project staff provided instruction in the model. Six teams made up of 12 individuals participated, supporting our decision to reduce the length of the institute. Figure 3 shows a group of teachers working on projects they implemented during this session. Approximately 45 students from 1st through 4th grade levels benefited from the summer enrichment-writing program sponsored by the Kalamazoo Public Schools in conjunction with the summer institute.

Figure 3. Participants planning collaborative Summer Institute activities

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Objective 1.4. To support local capacity building and improvement efforts by engaging general and special educators in action research related to the implementation of computer-supported writing process instruction

Activities and Accomplishments for Objective 1.4

Multiple strategies were used to engage professionals in continual professional development. One important strategy was to assist professionals to see the writing lab approach as dynamic and subject to continual improvement, and to view their own roles as important for expanding its effectiveness. Although the approach is supported by existing research, the need for additional information about children's written language development and the efficacy of intervention components is genuine.

During each summer institute, Dr. Kinnucan-Welsch introduced regional outreach teams to the concept of action research. She explained the purpose of action research as seeking answers to applied questions about instruction in the context of one's own classroom or school. She also led outreach team members to identify questions they were already asking and explained how such questions might be answered through action research. The regional outreach team teachers discussed their questions and generated preliminary procedures to answer them. At follow-up meetings, the group continued the discussion of action research.

The notion of conducting more formal action research projects was a difficult component of the model for many participants to adopt (as documented in the final survey data in Appendix C). Most were more concerned about implementing components the Writing Lab model and perceived themselves as having little time to conduct action research. Participants were able to grasp the reflective practitioner

concept with greater ease, however, and to focus on improving their methods within the context of individual case studies.

In working with development teams, we developed a routine for identifying questions in team meetings that we wanted to address collaboratively. One effective technique was for each member of the team to nominate an area of immediate concern by completing the phrase, "I wish we could..." The team then would collaborate on identifying priorities from the list and establishing mutual goals. The next step was to brainstorm treatment modifications that might resolve areas of concern and address mutual goals. At that point, the team would implement the plan and gather data on its effectiveness.

For example, at one point, after observing students complete a mid-year probe, a team agreed on a goal for students to experience more joy in written language expression. The plan for addressing this problem included instituting a period of free writing at the beginning of most writing lab sessions, along with more frequent author chair sharing. Results of the modified program were measured as qualitative differences in the students' independent focus on the writing process, expression of goals and plans for their own writing, and willingness to share written products with peers.

We used a similar strategy to engage intensive workshop participants to develop their own action research projects. Teams of speech-language pathologists and general or special education teachers attended workshop sessions together and planned projects collaboratively to address needs of their shared students. Figure 4 shows teachers working on teams to improve their skills at analyzing written language samples and establishing intervention targets and scaffolding strategies. Posters prepared by

participants for the final session of the intensive workshop series in Hamilton, Ohio are visible in the background. Sally Disney helped plan and organize this series and provided support to participants in completing their projects.

Figure 4. Teams of teachers and speech-language pathologists at workshop

Objective 1.5. To provide opportunities for general and special educators to work together, share their expertise, and disseminate their work to other educators

Activities and Accomplishments for Objective 1.5

Opportunities to work together, share expertise, and disseminate work to other educators occurred at the building and district levels as well as at workshop and outreach meetings. At the building level, local development teams planned instruction together and helped each other to implement the writing lab model.

Development team teachers also served as co-presenters at after-school workshops designed to teach their colleagues to use children's software features to

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support all stages of the writing process. In addition, the Dayton, Ohio outreach team from the Year 2 summer institute (with encouragement from Dr. Kinnucan-Welsch, project consultant and evaluator from the University of Dayton) continued to meet regularly, recruited another general education teacher to work with them, and obtained a local grant to fund computer-supported writing efforts in their school.

In December of Years 2 and 3, we brought together members of regional outreach teams who had participated in prior summer institutes to share with each other the work they had been doing in their home schools and to develop ideas and strategies for continuing to infuse components of the Writing Lab model in their own communities. We hosted additional regional outreach team follow-up meetings in March and June, 2000 and at the completion of the summer institute in 2001. Figure 5 shows teachers collaborating at one of these outreach team meetings.

Figure 5. Professionals sharing at outreach team meeting, summer 2001

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Outcomes Related to Goal One

The expected outcome of goal one was that local outreach teachers and regional development team teachers would continue to collaborate with each other to develop programs and services for students with disabilities at all of the outreach schools. Several methods were used to measure outcomes related to this goal, both immediate and long term. These included independent interviews of development team members by project evaluator, Dr. Kinnucan-Welsch; mid-session and end-of-session evaluations completed by summer institute participants; and a final survey that was mailed to all primary participants at the conclusion of the project. The evidence from these evaluation activities was used in formative fashion to modify activities during the project, and in summative fashion, to document the effectiveness of project activities.

In general, the evidence supports a conclusion that professional development activities were successful in accomplishing our first goal of connecting general and special education professionals to address the spoken and written language needs of children with disabilities collaboratively. The numbers of participants in development team activities (38), software workshops (45), summer institute follow-up outreach team meetings (33), and intensive workshops (65) totaled more than 180 educators, who learned to implement the major components of the writing lab model: writing process instruction, computer support, and inclusive educational practices. A much larger number (approximately 2,000) benefited from other workshops and are expected to benefit from publications related to the project.

Findings from interviews of development team members were used extensively in preparing the chapter in our forthcoming book (Nelson, Bahr, & Van Meter, in press) entitled, "Supporting Inclusion Through Collaboration." One observation was

that general education teachers were more likely to want to collaborate with special educators and speech-language pathologists in inclusive intervention when they saw the writing lab model as a means of meeting their general curricular goals. For example, a first grade teacher described about how addressing common goals meant avoiding the add-on approach she had feared at first:

> I was kind of skeptical of doing this in the beginning because I thought, "Oh boy, here we go again. Here is another add on. I don't know how much more of this I can take." And I was very pleased with them (special services professionals) coming in… And I just look forward to doing it next year, starting at the beginning of the year.

A third grade teacher at another school also commented on how she was influenced to join the project when a third-grade teacher from a prior development team school shared some of the products her students had produced during writing lab activities:

> So I looked at it as an opportunity for kids to get in and do more writing within the curriculum, not as an "add-on," not as something extra that we had to do but to get them to think more thoroughly, and um, be more observant about things we were learning in the classroom.

In the final survey (see Appendix C), we received anonymous responses from 21 primary participants regarding the degree to which they were implementing the components of the writing lab model. A majority of respondents indicated "yes" or "partial" to questions about whether they were continuing to implement specific components of the model. They also provided comments about aspects of the writing lab training that were most meaningful.

In addition to providing positive evidence about the ongoing implementation of the writing lab model, evaluation data have helped us develop a better understanding of the barriers to implementing certain aspects of the model. Survey responses suggest particular difficulties in the areas of conducting action research, establishing classroom-based interventions for including students with disabilities, and using computer supports to assist students to develop their language and literacy skills.

We also have gained insights into best
professional development. For example,
less successful than we had hoped was an
used by the outreach teachers. We think that the
fact that some of the outreach teachers were not regular email
was begun; others simply had too many commitments to participate regularly. Therefore, we modified that activity by developing a web page, which we have continued to maintain after completion of the project (www.wmich.edu/wlop). The web page has allowed us to make tools developed for the project (including the written language assessment tools, software taxonomy and evaluation form, and links to children's software vendors). Project staff also used other email list memberships (e.g., NECTAS, and the ASHA Division on Language, Literacy, and Education) to disseminate information about project activities and to alert other professionals to materials on the main web site.

Another disappointment was that we were not able to recruit the full complement of professionals originally targeted for participation in summer institute

region. We addressed this concern by shorte

did seem to contribute to the increase in participants during year 3. We continue to believe that, other than the more intensive development team experience, the mix of adult learning sessions coupled with immediate opportunities to implement the model with summer enrichment students served as the most effective method for conducting the training. We also have observed that the training was more effective in changing practice for those professionals who chose to join the project on their own and made some sacrifices in doing so (although several commented about the importance of federal financial support in enabling their participation).

Beyond shortening the summer institute itself, another attempt to address the recruiting problem was the development the intensive, 3-part workshops as another method to provide intensive professional development. Participants in these workshops also agreed to implement the model with their own students and to come back and report on the outcomes to peers. Although this method has allowed us to reach more teams of professionals, it too is initially threatening to many, and we have found that it takes considerable on-site encouragement to recruit teams to come to the sessions together as well as local support for completing projects and sharing results. Without such supports, professionals may experience the commitment as too overwhelming and decline to join the workshop series. This is a professional development model that we are continuing to implement beyond the conclusion of the project, however. We currently are in the midst of a 2002-2003 school year workshop series in Macomb Intermediate School District, with the support of Dr. Maureen Staskowski.

DISABILITIES IN MEANINGFUL GENERAL EDUCATION CURRICULA

Objective 2.1. To implement an inclusive computer writing lab as a context for language intervention among students with disabilities

Activities and Accomplishments for Objective 2.1

During the WLOP, we continued to develop the writing lab approach while implementing it ourselves in collaboration with deve choice allowed us to expand our knowledge of th develop case studies based on its successes (an

The fact that two of us (Nelson and Van M consistently for 2- to 3-days per week over the past four years, w general education teachers as they include students with disabilities in writing lab activities has enabled us to document the approach using "real-life experiences." We believe that the stories of collaborative problem solving for students, as well as the data from group written language probes (from 404 students from first through fifth grades who have participated in the approach, including 52 with disabilities or language and literacy learning risks) are compelling. We expect that they will continue to entice other professionals to change their practices to more collaborative and inclusive ones aimed at improved language and literacy learning outcomes for students with disabilities.

Ideally, writing lab activities are conducted three days per week, with at least one full one-hour session in the computer lab and two sessions in the classroom. At the completion of the project, however, as we continue this work at Spring Valley

The writing lab provides a natural context for addressing students' spoken and written language skills in a variety of instructional activities, including peer conferencing and author chair experiences, as well as engaging directly in the writing processes of planning, organizing, drafting, revising, editing, publishing, and presenting. Professionals across disciplines have learned to analyze students' written and spoken communication samples, to collaborate with students in establishing individual goals written in "kid language" in their author notebooks, and to provide individualized scaffolding that can support students to achieve those goals.

Objective 2.2. To provide opportunities for students with disabilities to engage in authentic social interactions with their nondisabled peers

Activities and Accomplishments for Objective 2.2

Within the inclusive contexts of the writing lab approach, students with disabilities have many opportunities to engage in social interactions with their general education peers. At each stage of the writing process, students share their work and solicit feedback and suggestions for improving their work during peer conferencing (illustrated in Figure 6) or author chair experiences.

Figure 6. Students communicating about their work during peer conferencing

Students with disabilities are not separated from their peers, nor are they treated differently during writing lab time. They do, however, receive individualized scaffolding to allow them to participate and to write along side their general education classmates. Scaffolding interventions address social problems in addition to issues related more directly to the writing process.

Objective 2.3. To provide opportunities for students with disabilities to publish and present their work in multiple formats (e.g., spoken, written, computer-based)

Activities and Accomplishments for Objective 2.3

The Writing Lab model affords students opportunities to share their work in a variety of formats. Across the years, students in the project completed a wide assortment of curriculum-based long-term writing projects, including book reviews ("published" in the school library and displayed with the books for other students to read), persuasive essays, business letters (mailed to local businesses, and generating a number of satisfying responses), personal letters, stories with morals and mottos, biographies, poems (shared in school-wide "poetry slams"), and reports (displayed at science fair open houses). Students routinely talked about their work with their peers during peer conferencing and "author's chair" times. The word processing program, *Ultimate Writing & Creativity Center* (The Learning Company) included a Presentation Theater component that allowed students to "play" their work on the computer monitor to students in other classes and to their parents during publishing parties and open houses. Students also had opportunities to post their written work in school displays, and two third-grade teachers published a weekly newsletter with students' written work for parents and other family members.

Outcomes Related to Goal Two

One of the outcomes of working directly in classrooms with development team and outreach team teachers was a shifting of attitudes and expectations of general education teachers regarding their included special needs students. Table 2 summarizes turning points that signify when teachers and students transition from viewing students with special needs as visitors in general education classrooms to viewing them as full members or "residents."

Table 2. Turning Points from Visitor to Resident Status for Included Students

Students	Teachers
• Participate socially and are accepted by peers • Show self-awareness of class membership -Say "I'm in…" rather than "I go to…" -Are willing to take new risks • Participate in larger group of learners -Make contributions to group activities -Share ideas, reflections, and learning strategies • Challenge selves to new levels of independence • Take pride in seeing their own success	• Share responsibility for -Student objectives -Classroom lesson plans -Instructional strategies -Scaffolding individual students -Anticipating needs during scheduling and planning • Share materials • Acknowledge students; hold them accountable for -Classroom procedure -Academic work • Celebrate student success together

Note: Prepublication copy of table to appear in Nelson, Bahr, & Van Meter (in press).

More than once, we observed teachers being uncertain about what to expect from their "special" students, sometimes allowing them to violate classroom rules that all the other students were expected to follow. One third-grade teacher told us, in fact, "You can't work with those kids. Those kids are special. They don't do writing in here." It took the building's special education teacher going into to his classroom to

say, "No, actually they're supposed to do writing in here," to help this teacher accept that his special needs students were to be held to the same standards as his other students, but with supports from the special service providers. By the end of the school year, we often heard this teacher say, "I'm having trouble with this student. I need to work with him a little bit more," and the next day we would enter the classroom and find the teacher sitting on the floor working with that student on some aspect of the writing process. When the teacher himself described changes in his perceptions in his final interview, he reported:

> I guess I'm a greater believer in the children and their learning. They can do a lot when you build their expectations just a little higher. ... It's widened and broadened my perspective with what I can do with a group of children.

A special education teacher in a development team school provided a similar observation. She compared student-teacher relationships for her students who participated in the inclusive writing lab approach and those who did not:

> It did a nice job of having them [the teachers] know what they [the special ed. students] can and cannot do. My other kids pulled that "I can't do that," when they can, and then get away with it.

The process of helping teachers realistically target IEP goals within the classroom curriculum also provided a powerful means of changing teachers' perceptions (including those of special education teachers) about their students' abilities. It often was necessary for project staff to help others *raise* their expectations to higher levels of language and literacy learning, rather than being "realistic" by lowering them. One special education teacher told the evaluation interviewer about how her students reached their IEP goals, and then exceeded her expectations:

> Just to give you some insights on the students—extremely, extremely low at the beginning of the year. Social skills were not there. Sentence structures in just speaking—I mean if we had a complete sentence come out of someone's mouth, it was amazing. So, and just, their thoughts were so scattered. So our objective, well my objectives for the year were, in the beginning, very low. I had expectations where I just wanted them to think clear thoughts and be able to communicate them verbally, and when they're talking, to make eye contact with each other, and wait until it's their turn; to be able to sit still when other people are sharing, to sit in front of a peer—and they went way beyond that!

When asked to provide an example of how the writing lab approach facilitated inclusive language intervention, one development team speech-language pathologist reported in her evaluation interview:

> Well, one in particular was the author's chair type experience that usually happened when we would do free writing or when we were at the end of a unit we were sharing. And a couple of my children … with speech and language needs and other labels, wouldn't have had that same opportunity to speak in front of their class at that same time if they were pulled out in their special ed. room. So it seems like it was nice to help them use strategies like making eye contact, practicing a couple of times before they went up there, talking about ways to deliver themselves in front of people. And that was really important for me to see, and I felt like I actually put some strategies into play that worked. So that was encouraging for me, and I think the students. I've got five students in the classroom, and they seem to raise their hands and want to be part of this time.

Another expected outcome for Goal Two was that students with disabilities would engage in more frequent and more successful social interactions with their typically developing peers. In implementing the approach, all team members played active roles in helping all students understand individual similarities and differences. Educators scaffolded peer-to-peer

interactions, withdrawing support when it was no longer required. As one development team member described in her final interview, at times the results were remarkable.

> I mean I saw [one child with cognitive-linguistic disabilities], in particular, in [a third-grade teacher's] room really stretching to meet and do what the other kids did, and I saw his peers supporting him in all his efforts. And in terms of kids that did come with their classrooms [to the computer lab]—and I have other classrooms that did not bring their special needs students—there is a marked difference in terms of how much special needs students have achieved this year. And I'm going to advocate that all classrooms follow that pattern next year.

The following comments by a multi-grade language arts consultant summarized the effects of holding high expectations for special needs students within inclusive settings:

> I saw support for what I've always read in mainstreaming literature—that when kids are able to interact with their peers, everyone succeeds. The bar really got held up for the special needs kids. I mean they really had to work, and they rose admirably to meet the challenge.

GOAL 3.0 TO PROMOTE LANGUAGE DEVELOPMENT AMONG STUDENTS WITH DISABILITIES USING COMPUTER-SUPPORTED WRITING PROCESS INSTRUCTION

Objective 3.1. To implement computer-supported writing process activities for students with disabilities and their nondisabled peers in four development team schools (one in Year 1, one in Year 2, two in Year 3)

Activities and Accomplishments for Objective 3.1

As reported previously, we established inclusive writing lab projects in three

different Kalamazoo elementary schools. We also worked closely with an outreach team in Comstock Michigan, in which a speech-language pathologist and teacher of first and second grade students implemented the inclusive writing lab approach. We gathered probe stories from students at three points in the school year and included Comstock students in the data analysis summarized later in this report. In addition, Dr. Kinnucan-Welsch, consultant to the project staff, provided ongoing support to an interdisciplinary team implementing the model in Dayton, Ohio, meeting with them regularly as they developed their implementation of the model. Support to other outreach schools was provided mainly through the repeat group meetings held once or twice per year.

Objective 3.2. To develop materials to assist general and special educators in implementing and managing a writing lab in their local schools

Activities and Accomplishments for Objective 3.2

Throughout the project, we developed and fine-tuned materials to assist others in implementing the writing lab approach. Many of these can be downloaded directly from our website (www.wmich.edu/wlop). They include forms for evaluating children's software programs and for conducting reading and writing assessments and planning individualized interventions. These forms and other tools also will be available in our book (Nelson, Bahr, & Van Meter, in press). Additional tools include minilesson outlines and related handouts (for author notebooks) on such topics as: writing processes, how to choose a topic, how to use more descriptive words, how to engage in peer conferencing, how to give an oral presentation, how to revise, how to punctuate sentences and dialogue, how to use the spell checker, how to use other software features, and how to interact using the author's chair.

Objective 3.3. To develop simple, valid, and reliable instruments to assess student writing products and processes in the context of a computer-supported writing lab

Activities and Accomplishments for Objective 3.3

We met this objective by developing a set of analysis procedures for written language samples that made sense to teachers as well as to speech language pathologists and that could be completed in a reasonable amount of time. The techniques yield baseline information about language skills in five potential goal areas: discourse-level, sentence-level, word-level (including spelling), writing conventions and spoken communication. These results are recorded on a worksheet that can be downloaded from our web site. The second of the two-pages in the form (condensed from a much longer one) is used to summarize the analysis findings and to write individualized objectives. The objectives are based on developmental progressions that are summarized both in our article (Nelson & Van Meter, 2002) and book (Nelson, Bahr, & Van Meter, in press). Objectives guide scaffolding techniques for assisting students to reach next higher levels of maturity in each of the target areas. Written language processes and products are targeted, as well as spoken communication skills for social and academic interactions.

The validity of these written language analysis procedures is supported for the purpose of guiding intervention. The results provide specific information about areas to target in intervention, as well as scaffolding strategies to assist their development.

For instructional and intervention purposes, we taught teachers and clinicians to make analysis decisions based on students' original samples (or photocopies of them). For research purposes, however, our graduate assistants transcribed and coded each

sample using the computerized software program, Systematic Analysis of Language Transcripts (SALT) (Miller & Chapman, 2000). Then we compared data from the coded samples statistically using the software program, SPSS (SPSS Inc., 1999).

As graduate assistants entered the transcripts, they divided utterances into T-units (main clauses, plus any embedded or subordinated phrases or clauses) and coded them for errors of spelling, punctuation, and word use, as well as sentence complexity and correctness. Story grammar ratings were based on Glenn and Stein (1980). To measure syntactic growth, sentences were coded as simple or complex, correct or incorrect [si] [sc] [ci] [cc]. Grammatical errors and cohesion problems were coded and computed as ratio of grammatical problems per sentence. The SALT software also provided counts of number and types of conjunctions. At the word level, spelling accuracy was coded by entering students' intended words, followed by their actual spelling (e.g., "night{nite}[sp]). Lexical diversity was measured by SALT counts of numbers of different words.

We computed transcription reliability as percentage of agreement for number of words (99%), number of different words (99%), and T-unit divisions (93%) based on 10 randomly selected samples that were transcribed independently by two research assistants. Reliability quotients for coding, computed by dividing the number of coding agreements by the total number of codes, ranged from 86 to 98 percent agreement for different sample sets. Agreement for story grammar ratings ranged from 77% to 94% for different story sets, with an average of 88%. Any disagreements (resolved through discussion) were no more than one point apart, and these often occurred for stories with qualities of ratings at two levels.

Objective 3.4. To evaluate the impact of computer-supported writing process instruction on the oral and written language skills of students with disabilities in grades 1-3

Activities and Accomplishments Related to Objective 3.4

A review of existing literature reveals a clear need for additional information on the written language development of typically developing elementary age students, as well as those with disabilities. Most importantly, almost no research has been conducted on the effectiveness of intervention targeting written language development. To summarize the review:

- Growth in utterance length has been documented for typically developing students (e.g., Hunt 1965, 1970; Loban, 1976; O'Donnell, et al., 1967; Scott, 1988).
- Growth in narrative maturity has been described (e.g., Applebee, 1978), and related to syntactic development (e.g., Glenn & Stein, 1980).
- Although cross-linguistic data recently have been reported (Berman & Verhoeven, 2002), limited information on written discourse development exists for integrated systems.
- Written and spoken discourse difficulties have been documented for students with language-learning disabilities (e.g., Gillam & Johnston, 1992; Roth & Spekman, 1989; Scott & Windsor, 2000).
- Evidence reported by the National Assessment of Educational Progress supports the effectives of writing process instruction for the broad population of 4th, 8th, and 12th grade students (U. S. Dept. of Ed, OERI, 1996).

- Evidence reported by MacArthur, Schwartz, & Graham (1991) and MacArthur, Graham, & Schwartz (1993) supports the effectiveness of computer-based writing process intervention for LD students in self-contained classrooms.

The results that we report here are based on the following:

- Stories were written by a total of 404 diverse students at four schools where the writing lab approach was being implemented at beginning, middle, and end of the school year.
- Basic directions for probe were: *Write a story. Your story should tell about a problem and what happens. Your characters and your story can be real or imaginary.*
- 206 males and 198 females were included in the sample.
- Of 322 students identified ethnically: 165 were African American, 136 Euro American, 20 Hispanic, and 1 Asian American.
- Of 259 students identified by learning label: 207 were typically developing or academically talented, 52 had special needs or were rated as high risk by their teachers.

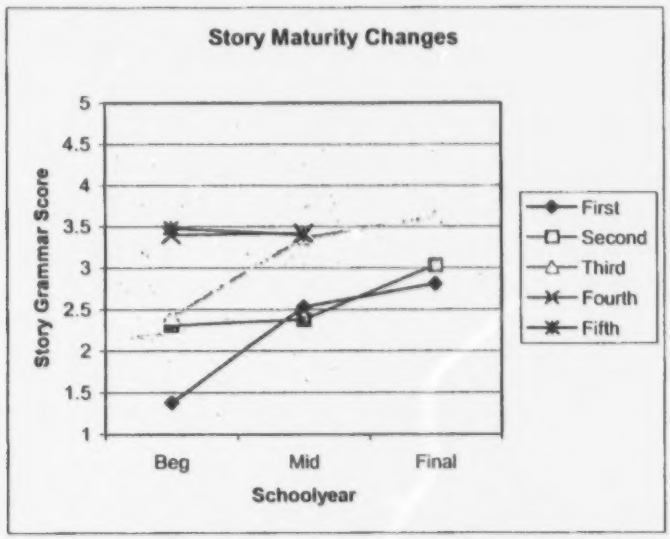
Outcomes for Goal Three

Analysis of the data from these 404 students (including two or three probes for each) is ongoing. Preliminary conclusions can be drawn, however, in three areas: (a) expectations for written language development for an ethnically diverse group of students, (b) variables that are particularly discriminating of disordered and typical language performance, and (c) evidence for the effectiveness of the writing lab approach documented as areas of significant growth. The outcomes of these analyses are summarized below:

Evidence of Normal Written Language Development

1. Discourse maturity changes in story grammar are illustrated in Figure 7. The results showed that talented first graders can write complete episodes and competent fifth graders can write isolated descriptions, but story grammar scoring is a valid measure for targeting change and capturing growth.

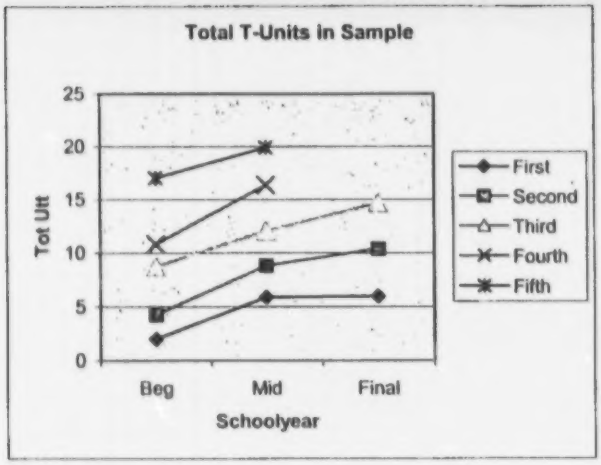
Figure 7. Story Grammar Maturity Within and Across Grade Level

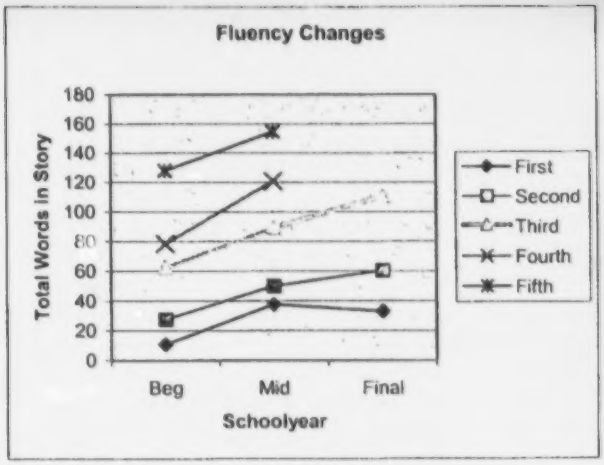


Story Scores: 1 = isolated description, 2 = temporal sequence, 3 = causal sequence, 4 = abbreviated episode, 5 = complete episode, 6 = complex/multiple episodes.

2. Fluency (measured in numbers of words and T-units produced in one-hour probes) grows in steady increments.

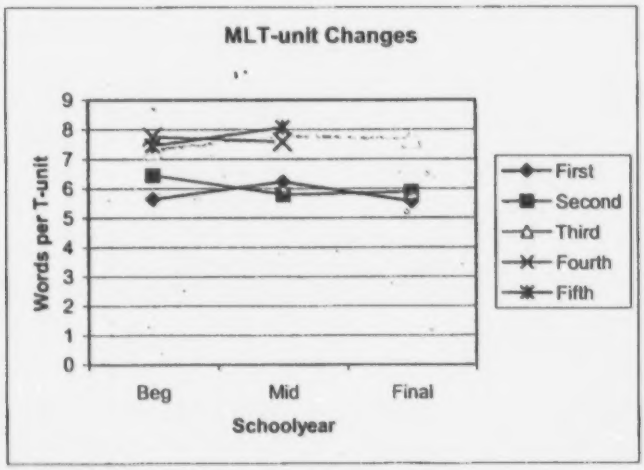
Figure 8. Written Language Fluency Changes Within and Across Grade Level





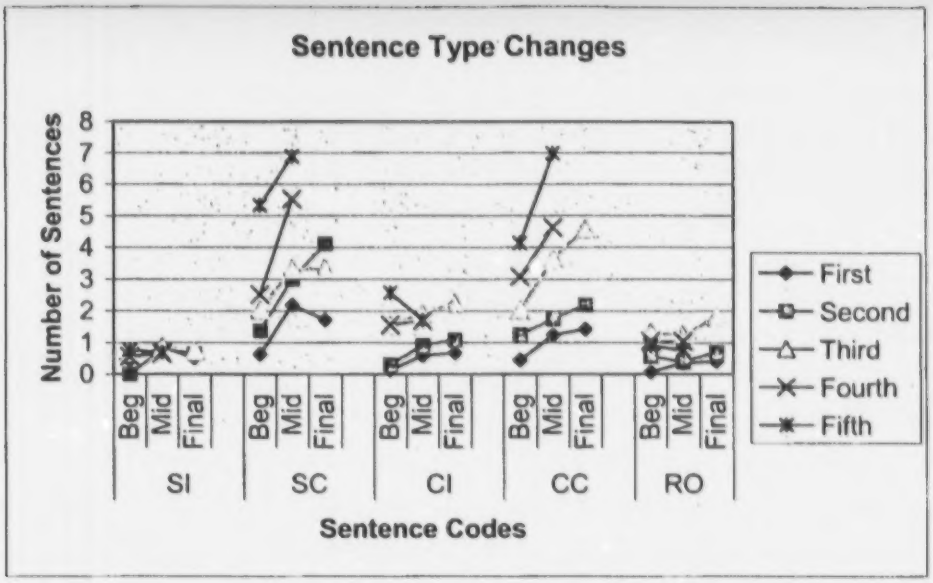
3. MLTU appears to take a significant jump from 2nd to 3rd grade, but it is not the most sensitive indicator of syntactic growth.

Figure 9. Mean Length of T-Unit Changes Within and Across Grade Level



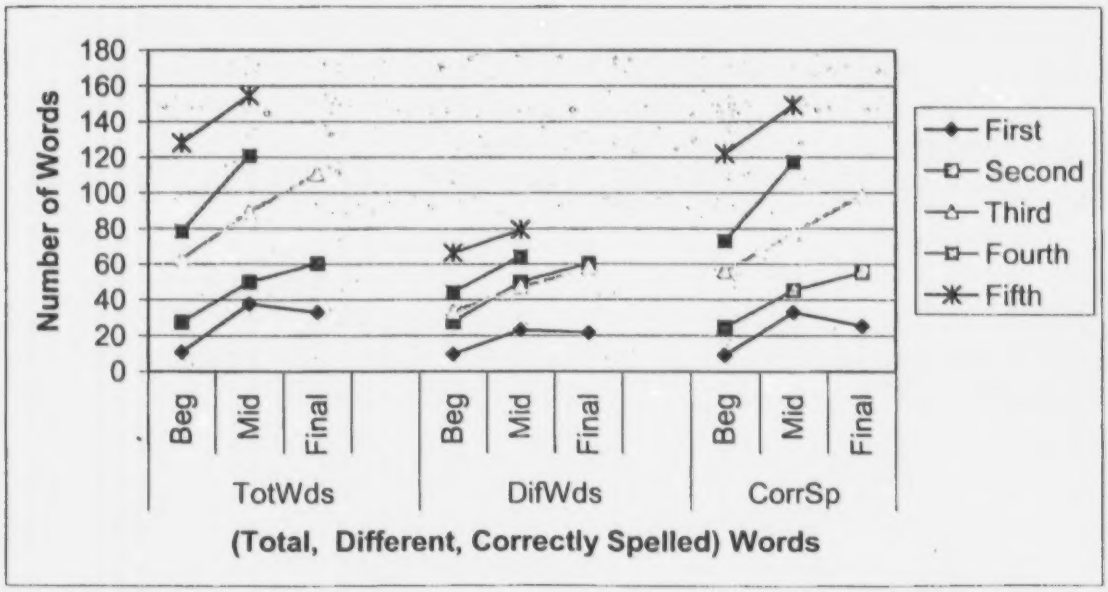
4. Our sentence coding system (si, sc, ci, cc), including run-on (ro), and counts of types of conjunctions (by SALT) may be better indicators of growth at the sentence level than MLTU.

Figure 10. Sentence Type Changes Within and Across Grade Levels



5. At the word level, numbers of different words and spelling accuracy are useful measures of growth.

Figure 11. Word Level Changes Within and Across Grade Levels



Best Variables for Discriminating Normal and Disordered Performance

Table 3 presents the results of t-tests comparing scores of typically developing and special needs students. Significant differences were found for these scores in the following areas:

- Story grammar scoring
- Fluency measures of total words & total utterances
- Numbers and types of conjunctions
- Number of different words (lexical diversity)
- Percentages of words spelled correctly and incorrectly

Table 3. Areas of differential performance for special needs students.

Language Measures	Results of Independent t-tests Comparing Scores for Typical and Special Needs Students at Points Across the School Year				
	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade
Discourse Level					
Story Scores	–	–	A**B*	A*	A(p<.08)
Tot Wds.	C**	A**C**	B*	–	B**
Sentence Level					
MLTU	–	–	–	–	B**
No. Conj.	A*C**	C**	–	–	–
Types Conj.	C*	C**	B*	A*	A*
% Gram. Error (drop)	–	–	–	–	–
Word Level					
No. Diff. Wds.	C**	A**C**	–	–	B**
% Spelling Error (drop)	A**	C*	B*C*	A**	B**

A = beginning year sample, B = mid year sample, C = year end sample (4th and 5th grade samples were gathered at point A & B only; The 4th graders had participated in writing lab as third graders)

* or ** independent t-test results significant at p<.05* (p<.01**) for **typical** and **special needs** students at a particular point in the school year.

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Evidence of the Effectiveness of the Writing Lab Approach

Analysis of points of significant growth at the discourse, sentence, and word levels are summarized in Table 4. Figure 12 shows discourse level changes for both typically developing and special needs students. Figure 13 shows word level changes for both. The results of these analyses justify conclusions that:

- This ethnically diverse group of typically developing students showed language growth in the writing lab.
- Students with special needs showed evidence of language growth similar to that of their typically developing peers.

Although these results are highly encouraging, we recognize the need for randomized, controlled trials to provide conclusive evidence of the efficacy of the approach. Our next research effort will be to design a project aimed at gathering such evidence.

Table 4. Evidence of significant growth at the discourse, sentence, and word levels

	Results of Paired t-test Analysis of Change Over Time				
Language Measures	**1st Grade**	**2nd Grade**	**3rd Grade**	**4th Grade**	**5th Grade**
Discourse Level					
Story Scores	A-B**	B-C*	A-B**B-C**	--	--
Tot Wds.	A-B**	A-B**	A-B**B-C*	A-B**	--
Sentence Level					
MLTU	--	--	--	--	A-B*
No. Conj.	A-B**	A-B**	--	A-B*	--
Types Conj.	A-B**	A-B**	--	A-B**	A-B*
% Gram. Error	--	--	B-C*	--	--
Word Level					
No. Diff. Wds.	A-B**	A-B*	A-B**B-C**	A-B**	A-B*
% Spelling Error	A-B* B-C**	A-B**	B-C*	A-B**	A-B ($p<.06$)

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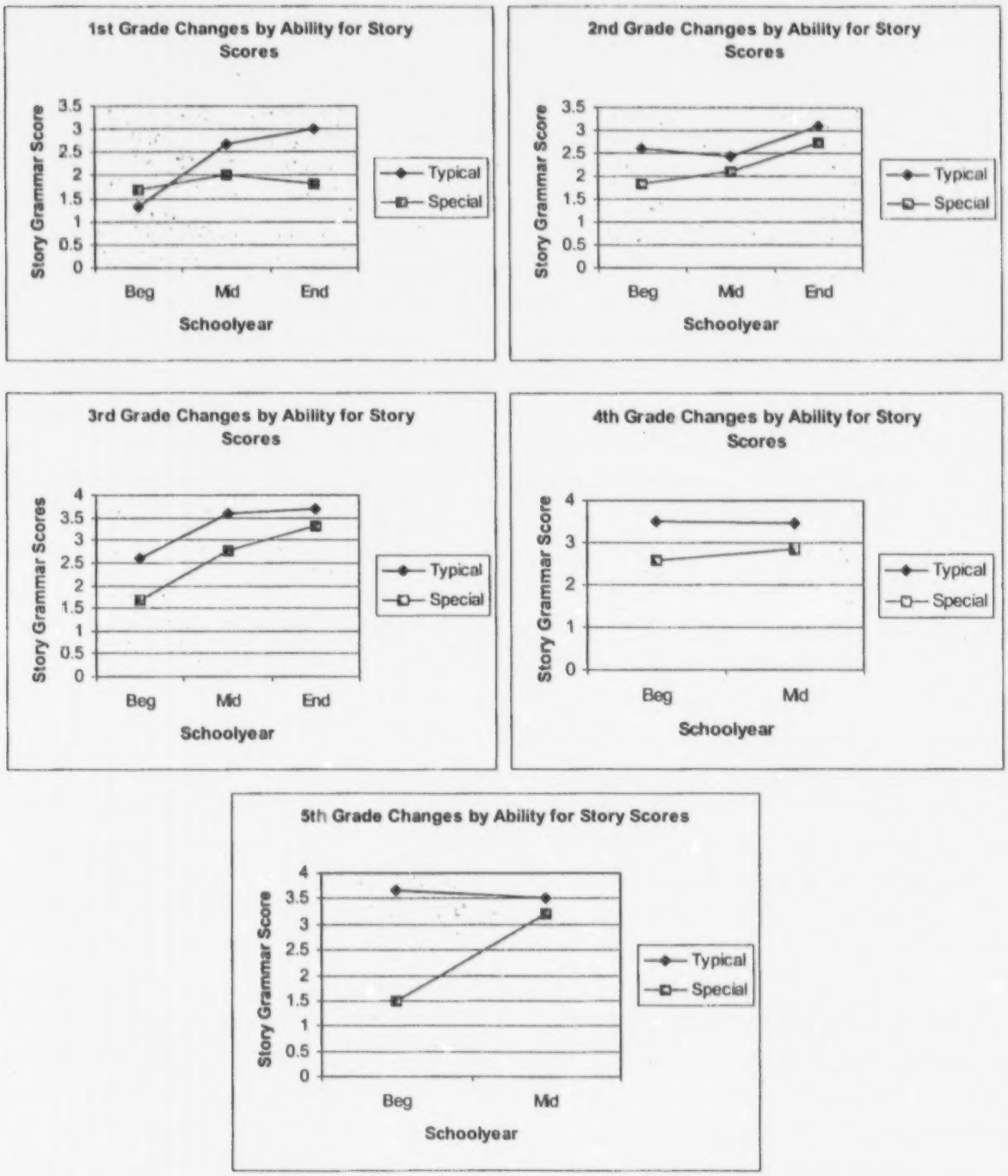
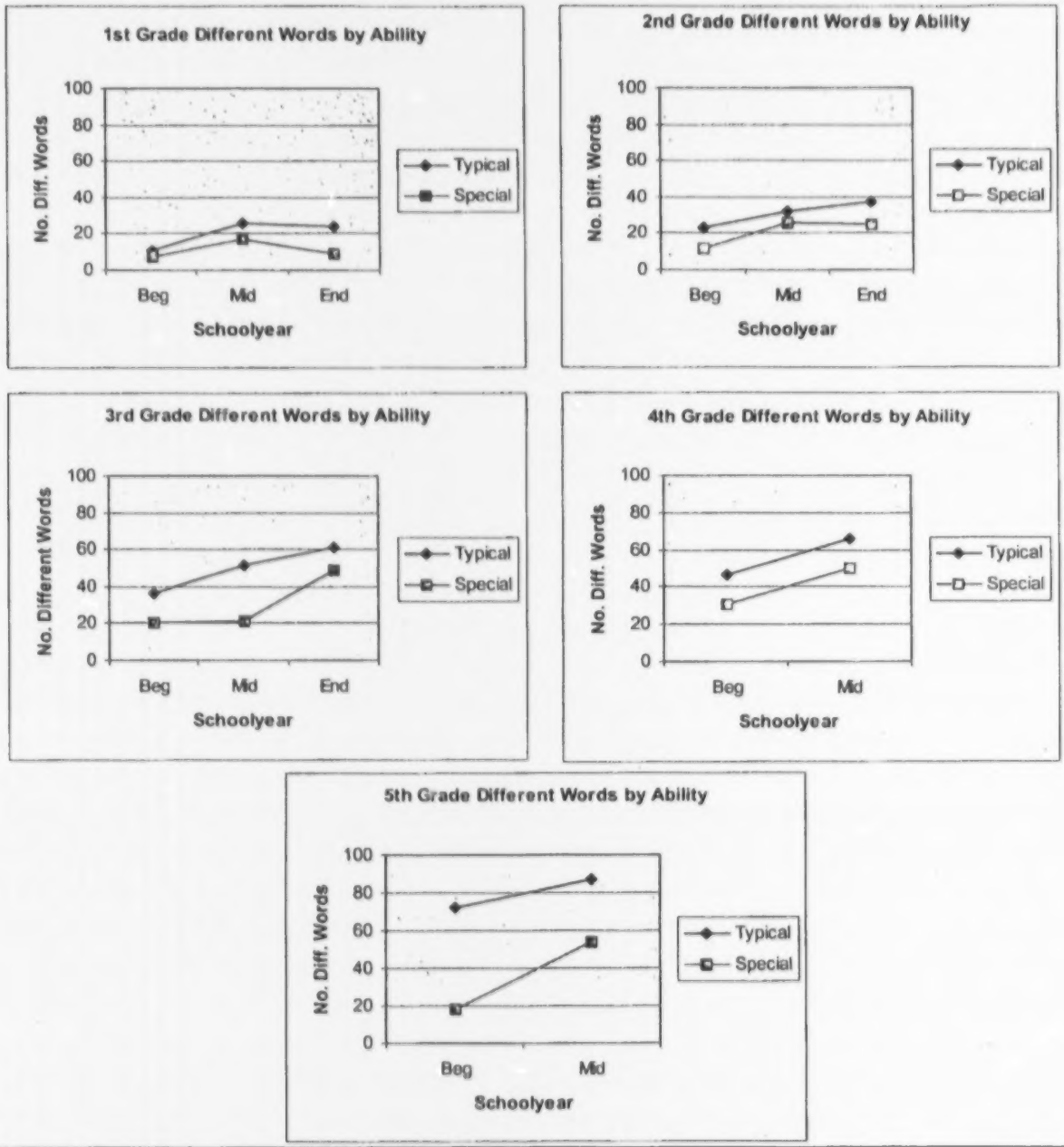
Figure 12. Discourse Level Changes for Typical and Special Needs Students



Notes: 1 = isolated description, 2 = temporal sequence, 3 = causal sequence, 4 = abbreviated episode, 5 = complete episode, 6 = complex/multiple episodes. Some 1st or 2nd grade children with special needs entered the group at mid-year or end-year when they achieved enough literate language abilities to write their own words. Stories were directly targeted in instruction and intervention at 3rd grade level, but not at 4th or 5th grade. The 5th grade data include students who received no intervention, as well as students who received intervention for only half of the sessions. These results will be analyzed separately in future presentations and publications.

Figure 13. Word Level Changes for Typical and Special Needs Students



Notes: Some 1st or 2nd grade children with special needs entered the group at end-year when they achieved enough literate language abilities to write their own words. Their data affected the means for the special needs group.
Intervention started at mid-year for 4th and 5th grade students. The 4th graders had participated in the Writing Lab during the previous year. Only some of the 5th graders participated in the mid-year probe, and not all 5th graders received intervention

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PART III. BUDGET INFORMATION AND MODIFICATIONS FROM ORIGINAL PLAN

A formal final budget report has been submitted by the research budget office at Western Michigan University. The project was completed for its originally projected cost of $442,207. No major deviations from the original plan were required in the way the project was conducted other than those previously reported. These previously reported modifications included a decision to establish three development team schools rather than four, and the development of alternative strategies for extending the outreach when we had difficulty recruiting the targeted number of professionals who could commit three full weeks to the summer institute experience. These modifications did enable us to achieve the project's three major goals. They also made it possible to extend the three-year project for a fourth year with no additional costs.

At the onset of the project, a change was made in the order of Project Co-Directors, making Dr. Nelson Principal Investigator. This change was relatively minor because Drs. Bahr and Nelson were equal partners in planning the project and remained that way during its implementation. The change was necessitated by Dr. Bahr's move from Michigan to Indiana at the project's inception. Dr. Bahr remained within driving distance, however, and made multiple trips to Kalamazoo across the four years to play a direct role in implementing it. Bahr coordinated efforts to select and order all of the software, taught at every summer institute, set up the WLOP web page, co-presented at many regional and national conferences, co-authored several journal articles, and served as first author for the chapters describing the computer software components in the book that is now in press (with Paul H. Brookes Publishing Co.) on the writing lab approach.

A number of activities of the WLOP are ongoing. Van Meter and Nelson are continuing to work with third grade teachers at Spring Valley School to implement an inclusive writing lab, where we also are training graduate students as part of a personnel preparation project, "Language and literacy for diverse populations," (funded with Part D funds from IDEA, with Dr. Yvette Hyter as principal investigator). In addition, we are maintaining the project web site and responding to inquiries about the writing lab approach. We continue to respond to requests for presentations and workshops, and we are in the midst of an intensive, year-long professional development workshop with interdisciplinary teams in Macomb Intermediate School District in Michigan. Our book, *The writing lab approach to language instruction and intervention*, is scheduled to be published by the autumn of 2003 by Paul H. Brookes Publishing, Co. Additionally, we are preparing two journal articles on the research conducted during the WLOP. Finally, we are designing a research project with experimental controls with the hope of adding to the scientific knowledge base regarding this highly promising intervention approach.

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Scott, C. M., & Windsor, J. (2000). General language performance measures in spoken and written narrative and expository discourse of school-age children with language-learning disabilities. Journal of Speech, Language, and Hearing Research, 43, 324-339.

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U.S. Dept. of Education, Office of Education Research and Instruction (OERI). (1996). Can students benefit from process writing? NAEP Facts (a news publication of the National Center for Education Statistics), 1(3), 1-6.

APPENDIX A. DISSEMINATION ACTIVITIES

Relevant books and chapters published (or in press) during the grant period

Nelson, N. W., Bahr, C., & Van Meter, A. (in press). *The writing lab approach to language instruction and intervention* (tentative title). Baltimore, MD: Paul H Brookes.

Nelson, N. W. (2002). Language intervention in school settings. In D. Bernstein & E. Tiegerman (Eds.), *Language and Communication Disorders in Children* (4th ed.) (pp. 315-353). Boston, MA: Allyn & Bacon. [completely new chapter]

Nelson, N. W. & Hyter, Y. D. (2002). Public policies affecting communication disorders. In R. Paul (Ed.), *Introduction to clinical methods in communication disorders* (pp. 219-238). Baltimore, MD: Paul H. Brookes.

Nelson, N. W., & Staskowski, M. (2000). Service delivery issues for schools. In R. Lubinske & C. Fratalli (Eds.), *Professional issues in speech-language pathology and audiology* (2nd ed.) (pp. 277-300). San Diego, CA: Singular Publishing Group.

Relevant peer-reviewed journal articles published during the grant period

Nelson, N. W., & Van Meter, A. M. (2002). Assessing reading and writing samples for planning and evaluating change. *Topics in Language Disorders 22*(2), 47-72.

Nelson, N. W., Van Meter, A. M., Chamberlain, D., & Bahr, C. M. (2001). The speech-language pathologist's role in a writing lab approach. *Seminars in Speech and Language, 22*, 209-220.

McAlister, K. M., Nelson, N. W., & Bahr, C. M. (1999). Perceptions of students with language-learning disabilities about writing process instruction. *Learning Disabilities Research and Practice, 14*(3), 159-172.

Relevant presentations and workshops, listed chronologically from most recent

Nelson, N. W., Van Meter, A. M., & Bahr, C. M. (2002, November). *Written language changes for students in inclusive classroom intervention*. Peer reviewed poster presentation at the Annual Conference of the American Speech-Language-Hearing Association, Nov. 24, 2002, Atlanta, GA.

Nelson, N. W., Catts, H., Creaghead, N., Ehren, B., Roth, F., Scott, C., & Staskowski, M. (2002, November). *Knowledge and skills for SLPs working with reading and writing*. Peer reviewed seminar presented at the Annual Conference of the American Speech-Language-Hearing Association, Nov. 22, 2002, Atlanta, GA.

Whitehurst, G. J., Creaghead, N. A., Masterson, J.., Staskowski, M., Nelson, N. W., Ferguson, M. L., & Neuman, S. B. . (2002, November). *Federal reading initiatives: Potential roles for SLPs*. Seminar invited by the program committee at the Annual Conference of the American Speech-Language-Hearing Association, Nov. 21, 2002, Atlanta, GA.

Nelson, N. W. (2002, October). *Challenges and opportunities of connecting language and literacy in clinical practice*. Invited lecture at faculty symposium, October 21, 2002, University of Arizona, Tucson, AZ.

Nelson, N. W. (2002, October). *Curriculum-based language assessment and intervention: Being relevant and making a difference*. Invited Eddy Foundation Lectures, October 18-19, 2002, University of Minnesota-Duluth, Duluth, MN.

Nelson, N. W. (2002, October). Language and Literacy: Making connections in assessment and intervention. Invited workshop. October 11, 2002. Elkhart, IN.

Nelson, N. W. (2002, October). *The SLP and literacy: The road to relevance for school-age children*. Invited 2-part workshop at the Annual Conference of the Louisiana Speech-Language-Hearing Association, October 5-6, 2002, Shreveport, LA.

Nelson, N. W., & Van Meter, A. M. (2002, September). *Curriculum-based language assessment and intervention*. 3-part workshop. Part I, September 27, 2002 at Macomb Intermediate School District; Part II, distance education session, December 6, 2002; Part III, on-site meeting, March, 21, 2003.

Nelson, N. W. (2002, August). *Curriculum-based language assessment and intervention: Targeting spoken and written language together for positive outcomes*. Invited workshop co-sponsored by Clark County Special Services Unit and the University of Nevada-Reno, August 12-13, 2002, Las Vegas, NV.

Nelson, N. W. (2002, May). *Targeting language and literacy outcomes: Infancy through adolescence*. Workshop sponsored by Alberta Children's Hospital, Calgary, Alberta, Canada.

Nelson, N. W., & Van Meter, A. M. (2002, March). *Tools and strategies for curriculum-based language assessment and intervention*. Invited workshop at the Annual Conference of the Michigan Speech-Language-Hearing Association, March 14, 2002, Mt. Pleasant, MI.

Nelson, N. W., Van Meter, A. M., Kopitzki, C., & Enslen, C. (2001, November). *Scaffolding strategies for achieving language and literacy outcomes*. Double miniseminar (peer-reviewed) presented at the Annual Conference of the American Speech-Language-Hearing Association, November 16, 2001, New Orleans, LA.

Nelson, N. W. (2001, October). *The role of the SLP in working with language and writing disorders*. Workshop series sponsored by Educational Resources, Inc., Braintree, MA, October 27, 2001, and New York City, NY, October 29, 2001.

Nelson, N. W., & Houle, G. (2001, May). *Funding opportunities from the U. S. Department of Education for speech-language pathologists and audiologists*. Invited lecture, co-presented with Dr. Gail Houle, U. S. Office of Special Education and Rehabilitations Services, at the Third Annual Workshop on Grant Writing in Communication Sciences and Disorders, American Speech-Language-Hearing Association, Rockville, MD.

Nelson, N. W. (2001, May). *Curriculum-relevant strategies for language assessment and intervention*. Invited workshop by the Kansas City, MO, Public Schools. May 11, 2001. Kansas City, MO.

Nelson, N. W., Scott, C. M., & Stark, J. (2001, March). *The language connection: Reading and writing*. Full day workshop presented at the 32nd Annual Conference in The Mount Sinai Series in Communication Disorders, March 23, 2001, New York City, NY.

Nelson, N. W. (2001, March). *Curriculum-based language assessment and intervention*. Full day workshop at the annual Stick Season Seminar sponsored by Green Mountain Speech & Hearing Services, Inc., March 9, 2001, Montpelier, VT.

Nelson, N. W. (2001, March). *Working within the curriculum to build language and communication proficiency*. Full day workshop at the annual conference of the Maine Speech-Language-Hearing Association, March 8, 2001, Rockport, ME.

Nelson, N. W., Van Meter, A. M., Bahr, C. M., & Kinnucan-Weslch, K. (2001, February and May). *Using writing process instruction to foster language development*. Series of 2 workshops sponsored by the Hamilton County Educational Service Center, held February 9 and May 4, 2001, Cincinnati, OH.

Nelson, N. W. (2001, February). *Literacy issues*. Discussion group leader for early childhood literacy and technology projects at the OSEP and NECTAS National Meeting, February 26, 2001, Washington, DC.

Nelson, N. W., Van Meter, A. M., Campbell, K., Neaton, A., Schostarez, S., & Hokenmaier, K. (2001, February). *Computer supports for writing process instruction*. Local presentation with principal and teachers in the Writing Lab Outreach Project, sponsored by the Homer Carter Reading Council, February 5, 2001, Spring Valley Elementary School, Kalamazoo, MI.

Nelson, N. W. (2001, January). *National initiatives*. Brief presentation as part of the NECTAS Literacy Practice Telephone Conference Call, sponsored by the National Early Childhood Technical Assistance System, University of North Carolina at Chapel Hill, January 31, 2001.

Nelson, N. W. (2000, November). *Being relevant and staying connected in clinical practice*. Round table discussion sponsored by the National Student Speech-Language-Hearing Association, presented at the annual conference of the American Speech-Language-Hearing Association, November 17, 2000, Washington, DC.

Creaghead, N., Nelson, N. W., Catts, H., Ehren, B., Roth, F., Scott, C., & Staskowski, M. (2000, November). *Roles and responsibilities of speech-language pathologists in literacy*. Miniseminar presented at the annual conference of the American Speech-Language-Hearing Association, November 18, 2000, Washington, DC.

Nelson, N. W., Van Meter, A. M., Bahr, C. M., Chamberlain, D., Kinnucan-Welsch, K., Hill, K., & Lynam, M. (2000, November). *Inclusive language intervention using a computer-supported writing process approach*. Full day institute presented at the annual conference of the American Speech-Language-Hearing Association, November 16, 2000, Washington, DC.

Staskowski, M., & Nelson, N. W. (2000, October). *Reading and writing: Speech-language pathologists making a difference*. Audioteleseminar sponsored by the American Speech-Language-Hearing Association, Rockville, MD. [original presentation on October 20, 2000]

Nelson, N. W. (2000, September). Plenary session moderator. Emergent and early literacy research workshop: Current status and research directions. [also chaired the ASHA committee that initiated the planning and collaborated with the funding agencies who co-sponsored the meeting].

Nelson, N. W. (2000, August). *Assessing and treating language and literacy problems in school-age children*. Invited presentation sponsored by the University of Texas-Austin, August 4, 2000, Austin, TX.

Nelson, N. W. (2000, May). *A computer-supported writing process approach to language intervention*. Invited presentation by the Canadian Association of Speech-Language Pathologists and Audiologists, Tri-Joint Conference, May 26, 2000, Toronto, Ontario, CN.

Nelson, N. W. (2000, May). *Facilitating access to the classroom curriculum and promoting academic success*. Sponsored by the New York City Board of Education, May 19, 2000, St. John's University, Queens Campus, NY.

Nelson, N. W. & Scudder, R. (2000, March). *Classroom-based language intervention approaches*. Invited presentation at the annual meeting of the Mississippi Speech Language Hearing Association, March 24, 2000, Jackson, MS.

Nelson, N. W., & Staskowski, M. (2000, March). *Where do we go from here: Preparing SLPs to work in school settings*, and *Roles of speech-language pathologists in reading and writing with children/adolescents*. Peer reviewed presentations at the annual meeting of the Michigan Speech-Language-Hearing Association, March 17, 2000, Grand Rapids, MI.

Nelson, N. W., & Shields, M. (2000, February). *Early Literacy: Facilitated Networking*. Informal session conducted at the National Meeting of Early Childhood Project Directors, Office of Special Education Programs (OSEP) and the National Early Childhood Technical Assistance System, Washington, DC.

Nelson, N. W., Bahr, C. M., Van Meter, A. M., Sturm, J. M., McAlister, K. M., Putnam, A. E. (1999, November). *Children's software features for supporting stages of the writing process*. Computer Lab session invited by the program committee, presented at the annual convention of the American Speech-Language-Hearing Association, San Francisco, CA.

Nelson, N. W., Catts, H., Ehren, B. J., Roth, F. P., Scott, C., & Staskowski, M. (1999, November). *Roles of SLPs in Written Language of Children and Adolescents*. Presented at the annual convention of the American Speech-Language-Hearing Association, San Francisco, CA.

Nelson, N. W., Bashir, A. S., Ehren, B. J., & Herrin, K. (1999, November). *Issues surrounding the use of cognitive referencing: Developing alternatives*. Session invited by the program committee, presented at the annual convention of the American Speech-Language-Hearing Association, San Francisco, CA.

Apel, K., & Nelson, N. W. (1999, November). *Use of computer-mediated communication between university classrooms*. Poster session presented at the annual convention of the American Speech-Language-Hearing Association, San Francisco, CA.

Nelson, N. W. (1999, July). *Language and literacy: Connections from Infancy Through Adolescence* (Part I and II). Full day workshop invited as part of the National Schools Conference by the Amercian Speech-Language-Hearing Association, Orlando, FL, August 1, 1999

Nelson, N. W. (1999, June). *Connecting language intervention to the curriculum*. Invited presentation at the Speech-Language Pathology Symposium sponsored by the Region IV Education Service Center, Houston, Texas, June 8, 1999.

Nelson, N. W. (1999, April). *Developing oral and written language through the curriculum*. Invited short course at the California Speech-Language-Hearing Association, Pasadena, CA, April, 16, 1999.

Nelson, N. W. (1999, February). *Instruction practices for a computer-supported writing lab*. Invited paper presented at The 8th Symposium on Literacy and Disabilities, Research Triangle Park, North Carolina, February 4, 1999.

Nelson, N. W. (1999, February). *Building language and making connections: Opportunities of a computer-supported writing lab*. The Don Johnston Literacy Lectureship Award Keynote Address presented at The 8th Symposium on Literacy and Disabilities, Research Triangle Park, North Carolina, February 4, 1999.

Van Meter, A., & Nelson, N. W. (1998, November). *Language-learning possibilities in narrative and expository discourse*. Paper presented at the Annual Conference of the American Speech-Language-Hearing Association, San Antonio, TX, November 20, 1998.

Nelson, N. W. Developing oral and written language through the curriculum. Conference of the Upper Peninsula Speech and Hearing Association and Northern Michigan University, Marquette, MI, October 9, 1998.

News Reports

From IEPS to IDEA. ADVANCE for Speech-Language Pathologists & Audiologists, August 23, 1999.

Neighborhood partners. Dayton Educator, Fall, 1999.

APPENDIX B. TAXONOMY OF SOFTWARE FEATURES

PLANNING AND ORGANIZING		
	Idea Generation Tools	***Organizational Aids***
Graphics-Based	Stimulus Pictures Clip Art Scene Creation Tools Drawing and Painting Tools Multimedia Authoring	Graphic Organizers
Text-Based	Brainstorming & Freewriting Activities Mixed-Up Phrases Idea Lists Story Starters On-screen Notepad	Outliners Prompted Writing Templates

DRAFTING
Picture Symbols Word Cueing and Prediction Abbreviation Expansion and Macros Collaborative Writing Speech Recognition

REVISING AND EDITING
Standard Editing Tools Thesaurus Tools Rhyming Word Tools Spelling Checkers Homonym Checkers Grammar and Style Checkers Speech Synthesis On-Screen Manuals

PUBLISHING	
Desktop Publishing	***Desktop Presentation***
Desktop Publishing Features Book Formatting Alternative Publishing Formats	Multimedia Options Electronic Book Formatting Publishing on the World Wide Web

Prepublication draft, to appear in: Nelson, N. W., Bahr, C. M., & Van Meter, A. M. (in preparation). The writing lab approach to language instruction and intervention. Baltimore: Paul H. Brookes Publishing Co.

APPENDIX C. FINAL SURVEY RESULTS FOR WLOP PARTICIPANTS

Professional Discipline

Speech-Language Pathologist: 10
Special Education Teacher: 2
General Education Teacher: 7
Upper grades: 2 Lower grades: 5
Other: Computer lab teacher K-6; Instructional Specialist

Activity(s) in Which You Participated

Kalamazoo School Development Staff: 4
(in school where we worked)
Summer Institute in Kalamazoo: 10
Graduate Student Experience: 3
Professional Presentation/Workshop: 8
(location): SERRC, Cincinnati, Ohio-6; graduate class of Nicki Nelson-1; Washington D.C.-1

Underlying values	Yes	Partial	No
Balance	12	3	
Authentic audience	11	7	
Constructivist learning	7	12	
Keep it simple	12	5	1
Dynamic	14	4	
Research-based	10	6	2
Ownership	10	7	1
Patience	13	6	

Successes and Barriers

- The above listed principles are not things we are taught to do per se by the district, but they are so obviously necessary in getting students to want to participate, feel ownership, and feel pride in their written work. A major barrier is that there never seems to be enough hours in the day, week, and semester to accomplish this process with all its components. I would love to have more people to do one-on-one with students. – Computer Lab teacher, school dev't staff, summer institute
- Successes: Students enjoy the "author's chair" and are eager to share their writing. My most struggling writer was usually able to "read" what he wrote and share with his peers even though others found it difficult to read his written work. Mini lessons allowed students to focus on one aspect of writing at any given time. Teachers and students were not so overwhelmed with trying to teach and learn everything at once. Barriers: There is never enough time to do writing and all expected curriculum areas as well as I would like. Often there is no other instructional person other than the teacher in the classroom and it is difficult to give the amount of individual attention students need. – Upper grade GenEd. teacher, summer institute, school dev't staff
- The actual writing lab has been very very difficult for me to initiate. I have implemented the principles in my student's writing, but do not have a "lab." The barrier is my time. I have been at two schools and next year it will be three. It is difficult to initiate this type of program when I'm not always available. – SLP, OH

- I find this paradigm highly valuable regardless of what is being taught. I have had the most success with 'keep it simple' and 'dynamic' although I was probably always pretty good at that. The most difficult aspects are 'constructivist learning' and 'ownership' particularly with older students who have become prompt-dependent or apathetic. – SLP, summer institute
- The students responded very well to the "author's chair." – 1st grade Gen. Ed. Teacher, summer institute in Kalamazoo
- Students enjoyed the writing outreach program however it was too long of a session for the age group. I would recommend 30-minute sessions for children 7-8 years old. – Lower grade GenEd. Teacher, summer institute
- Opportunities to teach parents phonological awareness and pre-literacy skills though individualized sessions and workshops. Barrier: no access to the software used in the program. – SLP, Washington DC, Graduate student experience
- Patience has been a hurdle to overcome. Educators struggle with the concept of an SLP teaching 'language' through writing. Few understand the SLP's scope of practice and using this "technique" is confusing to them – it is not the traditional therapy they are used to. – SLP, Graduate student experience
- Last fall my students wrote a book about themselves. They were five page books with one page about them as a baby, second graders, family, school and what they want to be in the future(career). First, they wrote in their journals. Second, we proofread together. Third, they typed their work on the computer. Next, they illustrated the page. Finally, I put them together into a bound book. The students then illustrated the cover. We had a weeklong celebration with five reading their book each day. Barriers: proofreading. – Lower grade GenEd. Teacher, summer institute
- It seems every year has a different focus with our students. The writing is adapted to what is needed each year (success). However, I'm not able to see the evolution of a good writing idea from year to year (barrier). – Lower grade GenEd. Teacher, school dev't staff
- Success: great student enthusiasm to be part of the writing experience at all age levels of learning. – Instructional specialist, dev't staff, summer institute, workshop
- The greatest barrier has been time to collaborate with cooperating teachers as this time has been extremely limited due to caseload size and severity. – SLP, OH
- I have seen a lot of improvement in my students writing and their attitudes toward writing – this is both special and regular ed students. – Special education, summer institute

Writing Process Instruction	Yes	Partial	No
Authentic writing projects			
provided opportunities	11	6	1
provided a range of audiences	8	5	5
helped students to focus	13	5	
accepted students where they are	16	1	
Recursive process			
focused on the processes of learning	12	5	
structured writing time	11	5	1
Language levels			
discourse level	8	9	
sentence level	17	1	
word level	14	4	
writing conventions	13	4	
spoken and interpersonal communication	13	4	
Learning components			
individual scaffolding	7	10	1
scaffolding worksheets	5	9	3
mini-lessons on writing process	15	3	
teacher/peer conferencing	10	6	2
author's chair	13	3	2

Successes and Barriers

- Mini lessons-using teachable moments, teacher/peer conferencing, and author's chair are three additions I've found invaluable to student positive participation. – Computer Lab teacher, school dev't staff, summer institute
- My students enjoyed having the writing notebook. Their information was more organized and free writing was a wait-time option some used. the individual scaffolding was sometimes hard to find time for. – Upper grade GenEd. Teacher, summer institute, school dev't staff
- It has been difficult to get regular education teachers involved. They become very busy with other curriculum demands and do not always have the time or motivation to begin a new project such as this. – SLP, OH
- My successes were that I did use writing process effectively as a therapy tool in various ways: in the classroom; supporting kids with their class assignments; and creating original pieces in the therapy room. The barriers: writing is hard. It took a lot of self-discipline as a therapist to stick with it and keep trying and teaching myself/problem solving as I went along. It was especially difficult as students were older, more resistant, and more engrained in one way of doing things. – SLP, summer institute
- This process is a wonderful tool for language impaired students to grow through use of their language. One of my students struggles with verb tense. However, after writing a few stories and working through the entire process, he began to 'catch' his own mistakes!! – SLP, Graduate student experience
- Students really respond to the author's chair. In lower elementary, peer conferencing is always problematic. The process works well to promote growth in all students. However, I

never feel like I've had enough time for writing processes. – Lower grade GenEd. Teacher, school dev't staff

- Kids feeling success of a finished writing product to share and to have ownership of for keeps! - Instructional specialist, dev't staff, summer institute, workshop

Computer Support	Yes	Partial	No
Software features	8	5	3
Keyboarding	6	5	5
Specialized access	8	3	4
Physical environment	8	7	1

Successes and Barriers

- My school has since purchased some of the software we need. – Lower grade GenEd. Teacher, summer institute
- I don't work in an educational setting so my kids are all seen individually. – SLP, Washington DC, graduate student experience
- Computers were limited due to availability in school. – Lower grade GenEd. Teacher, summer institute
- We have a limited amount of working computers and we have very little writing software. – 1st grade GenEd. teacher, summer institute in Kalamazoo
- I need to increase focus on computer use, keyboarding, etc. – Upper grade GenEd. Teacher, summer institute, school dev't staff
- Use of computers has been my biggest failure. I think I would have done better if I worked in a school that utilized computers regularly with students, but mine was a very 'paper/pencil' school. We did use the computer in therapy room with success but never in the classroom. – SLP, summer institute
- Limited availability of software and computers at the schools I'm at. – SLP, Graduate student experience
- Getting bolder every year with having students learn computer editing, etc. – Lower grade GenEd. Teacher, school dev't staff
- More computer time was allowed due to student output and MEAP emphasis. - Instructional specialist, dev't staff, summer institute, workshop
- I see my student in a small room with one computer/keyboard and this makes it difficult for everyone to get a chance to type. – SLP, OH
- I use very few software programs. My students use both word and power point to create authentic writings. – Special education, summer institute

Inclusive Instructional Practices	Yes	Partial	No
Educational outcomes			
included all students	14	3	1
modified objectives	12	6	
monitored student outcomes	13	5	
Collaborative team development			
collaborated as a team	6	10	2
developed action research questions	4	10	4
shared learning with others	7	10	1

Successes and Barriers

- Collaborating as a team was challenging because not all involved could meet at the same time and ideas were either ignored or not embraced. – Lower grade GenEd. Teacher, summer institute
- Barriers – Time! And skeptics. – SLP, OH
- All students are encouraged to write and their efforts are encouraged and accepted. I am currently trying to find ways to include writing in math, science and social studies on a regular basis. – Upper grade GenEd. Teacher, summer institute, school dev't staff
- WLOP gave me the confidence to make contact with teachers and find ways to get into classrooms whether supporting writing instruction or not. I knew I had something to offer classroom teachers. After two years of getting into classrooms, I am convinced beyond a shadow of a doubt that SLPs need to spend at least 50% of their therapy time in the classroom in order to understand and treat language impairment effectively. – SLP, summer institute
- While I continue to meet the needs of a variety of students, I don't have a good planning schedule to plan/share with colleagues. – Lower grade GenEd. Teacher, school dev't staff
- Just great professional teamwork to focus on children's writing. – Instructional specialist, dev't staff, summer institute, workshop
- I like the rubric used to analyze the complexity of children's writing skills. – SLP, OH

What I like best about the Writing Lab approach, or the elements I have been able to implement

- New experiences and flexibilities to help students succeed and be writers. – Instructional specialist, dev't staff, summer institute, workshop
- Author's chair, student comments, mini-lessons, and scaffolding. – Lower grade GenEd. Teacher, school dev't staff
- The BACKDROP paradigm is useful to me whether I am using a writing approach or using other techniques. I have become a full-fledged believer in collaboration. Writing lab helped me gain confidence to do it more often. – SLP, summer institute
- Organization, mini-lessons, author's chair, scaffolding language, and all students can be successful writers and do make noticeable progress. – Upper grade GenEd. Teacher, summer institute, school dev't staff
- Giving the students ownership, and creating a more meaningful editing process. – SLP, OH
- Utilizing the computer software to teach writing, and taking children through the writing process to culminate with a finished product. – Lower grade GenEd. Teacher, summer institute

- Writer's notebook and author's chair. Children really get a sense of ownership with their writing as well as are able to see growth over a period of time. – Upper grade GenEd. teacher, summer institute in Kalamazoo
- The software programs and the basic framework for writing. – Sp.Ed. teacher, summer institute
- The grant money was a real incentive for me to come and the new ideas I got from the other teachers. – Lower grade Gen. Ed. Teacher, summer institute
- Using computers early in learning for drafting, since this is realistic to future education/employment. The idea that speech-language goals can be targeted during the writing process and additionally incorporate into the curriculum. – SLP, Washington DC, graduate student experience
- The use of mini-lessons was very helpful. – 1st grade Gen. Ed. teacher, summer institute in Kalamazoo
- The ability for students to improve their language skills while producing a written product they can be proud of showing people. – SLP, Graduate student experience
- The writing lab approach provided students with a method to approach writing in what could be a non-threatening way, a logical procedure in developing the written piece, and an opportunity to feel pride in themselves at their work's presentation. – Computer Lab teacher, school dev't staff, summer institute
- Analyzing complexity using T-scores. – SLP, OH

<u>Aspects of the Writing Lab training that were most meaningful to me</u>

- The most meaningful aspect of the training for me was the thoughtful support I received at where I began and the patience I received in learning and practicing a new model for teaching. Not only was everything explained meaningfully with all questions answered, but also adequate time was spent with individuals to ensure quality in implementation. – Computer Lab teacher, school dev't staff, summer institute
- Ability to see the process in use. Watching others teach so I could learn from them. Computer use and introduction to software. – SLP, Graduate student experience
- Being young and a new teacher, this training helped a lot in my teachings. I was very hesitant when it came to teaching writing, but after the training I felt much more confident. – 1st grade Gen. Ed. teacher, summer institute in Kalamazoo
- Graduate student – didn't do training program. Access to a variety of writing software. – SLP, Washington DC, graduate student experience
- The new software titles. I learned about to help with the writing process were the most meaningful to me. – Lower grade GenEd. Teacher, summer institute
- I really enjoyed the group sharing sessions. – Sp.Ed. teacher, summer institute
- Dealing with teaching writing through the use of mini-lessons. This was the most helpful, when I though of teaching writing I was somewhat overwhelmed, this helped me see a focus. – Upper grade GenEd. teacher, summer institute in Kalamazoo
- Student involvement and the ability to work across the curricula. – Lower grade GenEd. Teacher, summer institute
- Writing lab training presented a detailed, organized way to teach writing. It was easy to include para-pros and interns in the teaching process. – Upper grade GenEd. Teacher, summer institute, school dev't staff
- Observing Nicki and Adelia work with the students. Going through the process with actual students. Observing teachers familiar with the process. – SLP, summer institute
- Writing for a purpose – to an audience. Having students edit more on the computer. – Lower grade GenEd. Teacher, school dev't staff

- Professional sharing of student writings and 'new' approaches to meet student needs as well as side-by-side assistance when needed. – Instructional specialist, dev't staff, summer institute, workshop

Any other comments

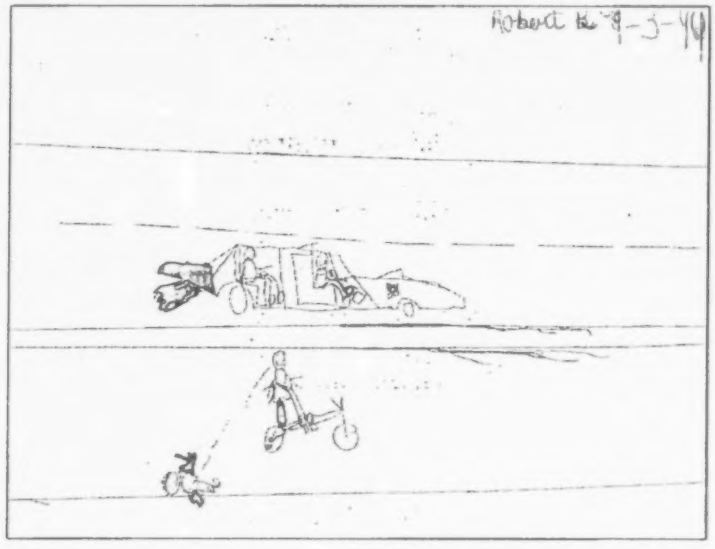
- I think a reading component would provide a more balanced program addressing needs of all students. – SLP, summer institute
- Consider SLPs who are not in one building five days per week! Consider handouts to give SLPs, which could provide information to give teachers(short half sheet explaining pros and cons). Thank you. – SLP, OH
- Recognize that teachers have to fit in five other subjects and writing and that plan time is limited. – Lower grade GenEd. Teacher, summer institute
- I enjoyed the opportunity to be a part of this project. – Sp.Ed. teacher, summer institute
- I really have not used the information from the workshop, as my private practice has been quite limited and have not included situation applicable to the workshop. – SLP, OH
- Being a teacher outside of the Kalamazoo district, I did not feel welcomed by them. The three professors were very friendly and made us 'outsiders' feel welcomed. – Lower grade GenEd. Teacher, summer institute
- I cannot stress enough the wonderful supportive feeling I enjoyed while working with the WMU trainers, as well as the fact that time was allowed to experience each step. These two points make the experience and continuation of implementation a success to me. – Computer Lab teacher, school dev't staff, summer institute

APPENDIX D. EXAMPLE CASE STUDY

Robert at the beginning of the school year:

- 3rd grade student (CA 8;3) with a speech-language impairment that was mostly resolved by the time he began participating in the writing lab.
- Ongoing issues with written language expression characterized by avoidance behaviors and limited production.
- Baseline sample at the level of reactive sequence, with 4 utterances, 24 total words, and 16 different words. Robert misspelled one-third of the words, attempting phonetic strategies, but demonstrating underdeveloped phonemic awareness of characteristics of words (e.g., *fet/fell*), word boundaries (e.g., *branobick/brand new bike*), and orthographic patterns (e.g., *rod/rode*).

Robert's initial plan and probe



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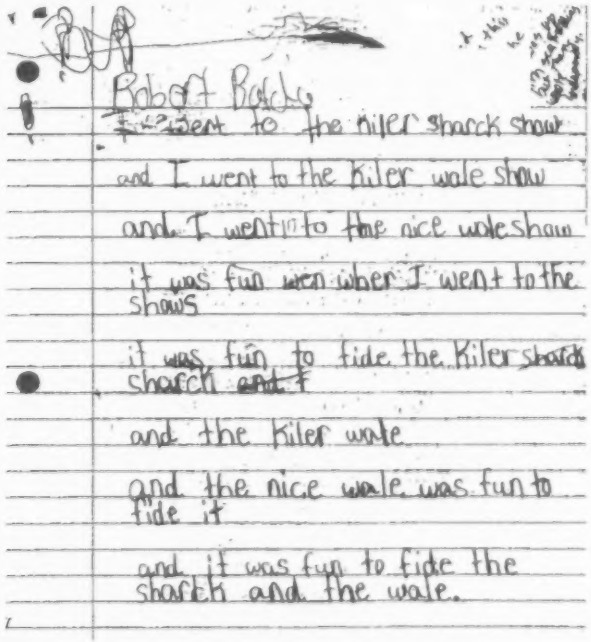
Goals and benchmarks were established for Robert to:

- Generate story ideas and begin writing independently.
- Produce stories with clear goals and planning (level of the complete episode).
- Demonstrate increased phonemic and orthographic awareness in independent spelling attempts.
- Interact successfully with peers in conferencing and author chair experiences.

Instructional strategies and supports for Robert included:

- Use of the authentic audience principle, with team members commenting on Robert's good ideas and drawing skill; scaffolding him to put those ideas into words in peer conferencing and author chair experiences. As Robert began to experience success in drawing "word pictures" as well as graphic ones, his ownership of goals to write more took hold, and his interest in and attention to writing grew. This technique also involved scaffolding during drafting and revising activities, expressing interest in learning more about Robert's characters and their motivations and other logical and causal relationships among events that Robert seemed to have in his head, but that he did not always include in his writing.
- To support higher level spelling skills, the team scaffolded Robert to recognize familiar word parts, and to pronounce words slowly, to listen to and feel the sounds in his mouth in sequence, and to represent them in his spelling.

Robert's mid-year probe


Robert Bolch
I went to the kiler sharck show
and I went to the kiler wale show
and I went to the nice wale show
it was fun wen wher I went to the
shows
it was fun to fide the kiler sharck
sharck and I
and the kiler wale
and the nice wale was fun to
fide it
and it was fun to fide the
sharck and the wale.

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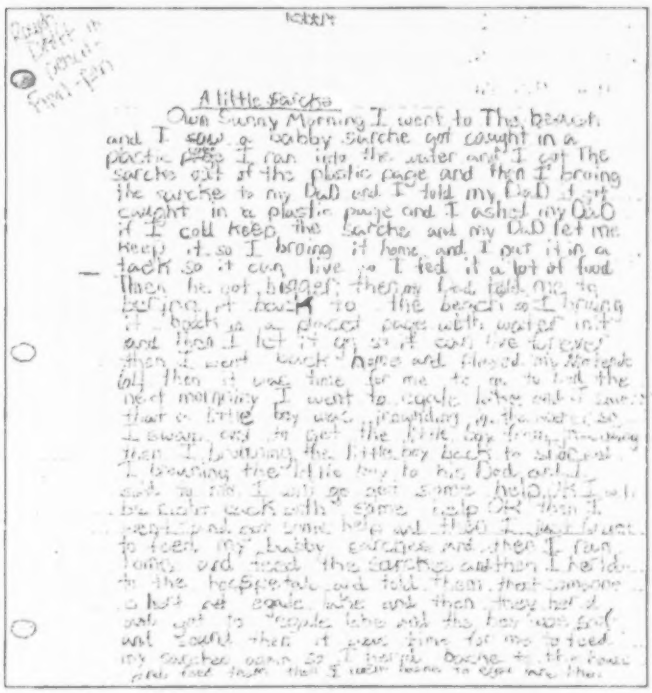
Robert at the end of the school year:

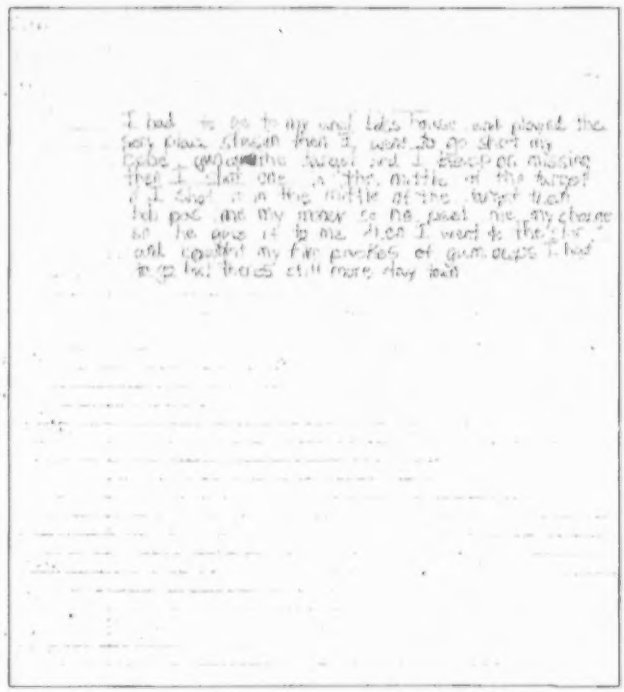
- Fluency bloomed, as evident in Robert's final probe. He produced 377 words (122 different words) and included several interesting words and idiomatic phrases (e.g., *safe and sound)*. He spelled 89% of the words correctly, some of which had later developing orthographic patterns (e.g., *caught, said*). Phonemic awareness difficulties remained apparent in a few misspellings (e.g., *sarcke/shark, page/baggie*), but Robert was using many more independent strategies to spell on his own.

- Robert's final probe story was structured with multiple episodes. Although there was some confusion about taking home the baby sharks he found, then letting them go again at his father's urging, but then hurrying back home to feed them in the midst of saving a drowning boy (once the boy was returned safely to the boy's dad), Robert clearly was experimenting with the idea of embedded episodes. In this story, he also described his main character's motivations, feelings, and planning. The best evidence for Robert's growth is in his story itself.



A little Sarcke

One Sunny Morning I went to The beach and I saw a baby sarche got caught in a plastic I can into the water and I got The sarche out of the plastic page and then I brung the sarcke to my DaD and I told my DaD it got caught in a plastic page and I ashed my DaD if I coll keep the sarche and my DaD let me keep it. so I brung it home and I put it in a tack so it can live so I fed it a lot of food Then he got bigger, then my Dad told me to bring it back to the beach so I brung it back in a plastic page with water in it and then I let it go so it can live forever then I went back home and played my Nintendo 64 then it was time for me to go to bed the next morning I went to cycle later out I saw that a little boy was draging of the water so I swam out to get the little boy from drowning then I brung the little boy back to shore I brung the little boy to his Dad and I said to him I will go get some help OK I will be right back with some help OK then I got help and we came back and then I went to feed my baby sarckes and then I ran home and used the sarcke saither then I held to the hospital and told them that someone is hurt at cycle lake and then they had and got to cycle lake and the boy was fine and I told them it was time for me to feed my sarcke again so I ran back home to the beach and fed them then I went home to eat me then



I had to go to my uncle Eds house and played the play place station then I went to go start my bike and the sweet and I forgot all about that I left one in the middle of the target I I left it in the middle of the target then he gave me my money so he gave me my change so he gave it to me then I went to the 7/11 and got my five packes of gum and I had to go but there still more day left

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